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LECTURES
UPON
DISEASES OF THE RECTUM
AND THE
SURGERY OF THE LOWER BOWEL.

DELIVERED AT THE BELLEVUE HOSPITAL MEDICAL COLLEGE

BY

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P R E F A C E .

THE favor with which the first edition of this work was received has imposed upon the author the duty of preparing a second, which should have been fulfilled with less delay on his part. He has endeavored to render this edition, which has been largely rewritten, more useful to students and practitioners by introducing new matter, mainly in the shape of opinions and cases, from authentic sources, which his own experience has led him to select for their value in illustrating the present state of our knowledge.

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CONTENTS.

	PAGE
LECTURE I.	
PRURITUS ANI—ERYTHEMA—HERPES—CHRONIC ECZEMA—ECZEMA MARGI- NATUM—OXYURIS VERMICULARIS, OR THREAD-WORM—HÆMORRHOIDS : VARIETIES, CAUSES, PATHOLOGICAL ANATOMY—EXTERNAL HÆMOR- RHOIDS	1
LECTURE II.	
INTERNAL HÆMORRHOIDS	22
LECTURE III.	
PROLAPSUS ANI	54
LECTURE IV.	
POLYPUS, AND BENIGN TUMORS	95
LECTURE V.	
ABSCESS	128
LECTURE VI.	
FISTULA IN ANO	156
LECTURE VII.	
FISSURE, OR IRRITABLE ULCER, OF THE ANUS	197
LECTURE VIII.	
ULCER OF THE RECTUM	221
LECTURE IX.	
BENIGN STRICTURE OF THE RECTUM	258

	PAGE
LECTURE X.	
BENIGN STRICTURE OF THE RECTUM (<i>Continued</i>)	292
LECTURE XI.	
CANCER OF THE RECTUM	322
LECTURE XII.	
CONGENITAL MALFORMATION—FÆCAL IMPACTION—FOREIGN BODIES IN THE LOWER BOWEL—ATONY OF THE RECTUM—DIAGNOSIS AND EXPLORA- TION—NEURALGIA OF ANUS OR RECTUM—HYGIENE OF THE LOWER BOWEL	363

ILLUSTRATIONS.

FIG.	PAGE
1. Section of an external hæmorrhoid.....	<i>Esmarch</i> 15
2. Section of an external hæmorrhoid after injection.....	<i>Froriep</i> 15
3. Partial prolapse.....	<i>Bryant</i> 57
4. Complete prolapse.....	<i>Original</i> 58
5. Complete prolapse, with peritœneal pouch.....	<i>Cruveilhier</i> 59
6. Invaginated mass of intestine present in the rectum.....	<i>Bryant</i> 64
7. Invaginated mass of intestine in colon.....	<i>Cruveilhier</i> 70
8. Vertical section of commencing polypus.....	<i>Esmarch</i> 98
9. Section of commencing polypus under higher power.....	<i>Original</i> 99
10. Villous, or granular, polypus.....	<i>Gosselin</i> 108
11. Varieties of fistula (diagram).....	" 158
12. Orifices of fistula.....	<i>Mollière</i> 166
13. Orifices of fistula.....	" 166
14. Instrument for introducing caoutchouc ligature.....	179
15. Rectal bougie.....	<i>Mollière</i> 295
16. Rectal bougie.....	" 295
17. Artificial anus after lumbar colotomy.....	<i>Bryant</i> 309
18. Stricture of rectum (epithelioma).....	<i>Agnew</i> 325
19. Microscopic appearances in epithelioma of rectum.....	<i>L. A. Stimson</i> 331
20-23. Microscopic appearances in epithelioma of rectum; follicles.	<i>L. A. Stimson</i> 331, 332
24. Microscopic appearances in epithelioma of rectum; follicles...	<i>Cripps</i> 332
25. Congenital imperforation of rectum.....	<i>Givaldès</i> 368
26. Speculum ani.....	<i>Original</i> 392
27. Boxwood spatula.....	392

LECTURES
UPON
DISEASES OF THE RECTUM.

LECTURE I.

PRURITUS ANI—ERYTHEMA—HERPES—CHRONIC ECZEMA—ECZEMA MARGINATUM—OXYURIS VERMICULARIS, OR THREAD-WORM—HÆMORRHOIDS: VARIETIES, CAUSES, PATHOLOGICAL ANATOMY—EXTERNAL HÆMORRHOIDS.

As it falls within my province to lecture also upon the *Diseases of the Rectum and Anus*, I propose to give you a rapid review of this subject, completing its practical details as fully as the time at our disposal will permit. I do this with the more pleasure, as these diseases, among the most common and painful you will encounter in ministering to the ailments of humanity, are for the most part relievable by the resources of our science and art; and opportunities have fallen in my way of acquiring a good deal of experience in their management. Naturally, these diseases are unattractive, even repulsive; and those who suffer from them habitually manifest more than usual hesitation in applying to the surgeon; but the positive and, in some cases, wonderful relief to extreme suffering we have it in our power to afford,

invests these complaints with great interest to the medical mind imbued with the true professional spirit. Do not allow repugnance or false delicacy to deter you from getting a thorough knowledge of this class of diseases, and you will find that you have thus acquired the power of doing a great deal of good.

In popular language most of the maladies affecting the lower bowel, or its outlet, are called "piles," and naturally, for hæmorrhoids, of which this is the synonym in common use, in some one of their various forms, are, undoubtedly, the most common of the diseases of this region. I have known nearly all of them to be complained of under this general designation, and not alone by the careless and uninformed. I was present at a consultation in the case of one of our most learned and able surgeons, suffering from cancer of the rectum, who persistently spoke of his malady as "piles," and was anxious that I should attempt their removal. It is by no means safe, therefore, to accept the assertion of a patient that his complaint is really hæmorrhoidal, without inspection.

Simple *itching* of the anus, in learned language, "pruritus," is a most annoying ailment, which is often very persistent, and capable of rendering life almost unbearable. It is generally a symptom of some other disease; but it is not always easy to find out the nature of this disease, and, by curing it, get rid of the symptom.

In its simplest form *pruritus ani* is caused by a morbid condition of the delicate integument that lines the anal orifice, the result of repeated overstretching in the extrusion of costive stools; what is commonly called "a low degree of inflammation." This condition

demands for its cure the use of sulphur and cream of tartar or some other mild laxative, or, better still, the use of an enema of tepid water, and local bathing with warm bran-tea, in which a very little soda has been dissolved, simple lead-water, Goulard's cerate, or vaseline.

This form of inflammation, which is not uncommon in certain localities of the body where neighboring surfaces of skin are habitually in contact with each other, is called *erythema*. New-born infants are not unfrequently affected by it in the flexures of their joints; and corpulent adults, also, between the buttocks, between the scrotum and thighs, and, in women, beneath pendulous mammae.

An eruption of *herpes*, or "fever-blisters," so common about the lips and nostrils after an attack of ague, is liable to crop out at the anus, but not often, except in women. This disease seems to affect by preference the immediate neighborhood of the outlets of the body; thus, it often breaks out upon the prepuce, where, after its little blisters or vesicles have broken, it presents the appearance of a cluster of soft chancres—for which it is very frequently mistaken. These same appearances at the anus might possibly—at the Charity Hospital, or among loose women—lead to a similar question, but hardly elsewhere. Herpes soon dries up and gets well; but it might, through neglect, become complicated with erythema in this locality, and persist. Under these circumstances, in addition to the local remedies already mentioned, it will be found useful to keep the irritated surfaces from contact with each other by dusting them with powdered starch, oxide of zinc, or sub-nitrate of bismuth.

In some persons dry powders do not agree with the skin when irritated, in which case lotions with glycerine and tannin, or hydrocyanic or carbolic acid, may be applied to allay the itching, and picked lint, prepared cotton, or a fold of soft linen interposed between the inflamed surfaces.* If of long duration, more stimulating applications may be required, such as the zinc lotion or ointment of white precipitate; but, in this case, you should place the patient in a good light, and carefully repeat your inspection of the part.

This is a locality where we frequently find *chronic eczema*, with its moist exudation, its exacerbations, and its ferocious attacks of itching after the patient has got warm in bed. Here more systematic treatment is necessary to cure the disease, for it is notoriously obstinate. In addition to your soothing emollients, you require stimulants of specific qualities—among which I have found “yellow wash” the best; and chloroform ointment (℥j to ʒj) the most reliable palliative for nocturnal itching. Compound tincture of iodine, from one part in eight of water up to full strength, is an excellent local application. It often calms itching more effectively than any other remedy. Strong solutions of nitrate of silver in water and of carbolic acid in glycerine seem to suit some cases better than the iodine. The patient's constitution and habits of life must be studied, for this ailment is often kept up in persons of gouty constitution by the use of alcoholic stimulants. Where the skin has become thickened, the liquor potassæ will do good as a local

* Gosselin (*Nouveau Diction. de Méd. et de Chir. pratiques*) recommends a glycerole of powdered alum and calomel, in the proportion of ʒij of the former and ʒj of the latter to ʒij of glycerine. Curling recommends a lotion of borax in infusion of tobacco.

application, but it must be judiciously used. Cod liver oil internally is a good remedy where the nutrition is defective; it has also the advantage of keeping the stools soft.

The habit of scratching seems in some cases to keep up this disease, aided, no doubt, by the acid perspiration, and irritating character of the secretions, and other matters in constant contact with the part. To meet this indication for cure, I have directed a wide-mouthed bottle of chloroform ointment to be kept within reach at night, and freely applied as soon as the itching comes on. I believe this application never fails to produce its effect in arresting the itching; but, to preserve its efficiency, it must be always well corked, as the chloroform soon evaporates if the ointment is kept in an ordinary box or jar. In the morning the part should be fomented with bran-water, rendered alkaline by the addition of a very little carbonate of potash—the ordinary pearl-ash in domestic use—and this fomentation should be repeated as often as practicable. A solution of simple bicarbonate of soda, saturated, is also effective in controlling itching. There is a certain pain-killing quality possessed by this salt beyond its property of neutralizing acidity. After the part has been well dried, I usually direct the patient to place a little wad of *prepared oakum* in contact with the affected integument. This substance keeps well in place by its adhesive quality and molds itself to the parts with which it is in contact; it prevents the morbidly altered surfaces from touching each other, and at the same time keeps them constantly moistened by the tarry exudation it affords, which of itself is a remedy of no little value. I attach

a good deal of importance to this simple expedient in the treatment of eczema of the anus; for it happily meets so many of the indications for cure.

You can not be too careful in the diagnosis of this affection, for I feel confident that it often escapes recognition. Eczema is a multiform disease, assuming various aspects, according to locality and duration. When the skin *around* the anus is involved, it is not difficult to recognize the nature of the disease; but, when confined to the orifice itself, the folds of delicate integument often present only a water-soaked appearance, with increased redness at the bottoms of the little gullies between them—sometimes raw cracks extending pretty well within, and these appearances do not always suggest the idea of eczema. The local application of a finely pointed stick of nitrate of silver, gently, to the bottom of these cracks helps to palliate the itching, and hastens the cure. There is an analogous affection of the lips, and also of the external ear-passages, which is equally obstinate.

I have often thought that the internal administration of Fowler's solution of arsenic has aided in the cure of eczema of the anus; and, in women, I should combine it with iron in some form. The use of the Turkish bath twice a week is also an adjuvant of undoubted value, but I only advise it in persons who are over their normal weight, and not suffering from debility.

There is one point of practice recently taught us by German dermatologists that you must never lose sight of: that is, the possibility of the presence of a parasitic plant in the altered epidermis of the af-

fect part, by which the disease and consequent itching are kept up. There is a form of eruption, called by Von Hebra *eczema marginatum*, with elevated edges and well-defined margin, which has existed in the most obstinate cases of pruritus of the anus I have encountered. If you thoroughly rub these scurfy margins with a little glycerine, and then scrape off a drop with the edge of a dull scalpel, and place it upon a slide under the microscope, you will recognize the spores of a parasitic plant, which is growing like a weed in the diseased scarf-skin.* If you kill this vegetable growth, the chronic irritation of the skin will straightway get well, and to do this use the solution of *sulphurous acid*, as prepared by Squibb, for sulphur is the best of all parasitocides, and this is the best form in which it can be applied. Sop it on two or three times a day, at first diluted with an equal quantity of water; afterward, stronger, if well borne. A solution of corrosive sublimate, gr. ij—iv to ʒj, applied after thoroughly washing the part with soap and warm water, may be tried in cases which resist the sulphurous acid, and pure tincture of iodine acts often very well. Soap and water should always precede the application of a parasiticide, because the delicate spores are generally more or less shrouded in fat, and the latter must be removed before the parasiticide can act. All cases of *eczema marginatum* re-

* This is known as the *trichophyton* of Malmsten, and the spores of this vegetable parasite, in the shape of minute clusters of highly refracting vegetable cells, most readily detected in contact with the bulb of a hair extracted from the affected part, have been demonstrated to be always present in the so-called *eczema marginatum* (which, in fact, seems to be hardly distinguishable from the better known *herpes tonsurans*), by Kobner, of Breslau, and Pick, of Prague.

quire internal tonic measures in addition to the local treatment. The malady is uncommon in this country, and not often encountered in Germany. Hebra says it occurs most frequently in tailors, and in people who ride on horseback. It is almost unknown in the female (at the anus), and in the male it usually takes its origin between the scrotum and thigh, where they are habitually in contact.

Remember, also, that constant irritation of the skin, in some constitutions, will almost invariably establish a chronic "salt rheum." Thus, you will often see it affecting the skin in the neighborhood of old varicose ulcers of the legs, caused in the first place by poultices and rancid salves applied for the purpose of healing the ulcer, and afterward kept up and rendered almost incurable by the defective character of the local circulation due to the varicose and over-distended condition of its veins. Now, these same conditions often coexist at the anus: constant exposure to contact of irritating substances and a sluggish condition of the circulation of the part from varicose hæmorrhoidal vessels. To treat this disease successfully, then, you must neither underrate its importance nor the difficulty of the task you assume; but, with the means I have pointed out to you, I trust you will not fail. In any event, do not confound it with *pruritus ani*.

The *oxyuris vermicularis*, or thread-worm, often effects a lodgment in the rectum, especially of children, and this parasite is a frequent cause of itching at the anus. It is generally remedied by injections of lime-water, by which the worms are dislodged, and the use of means to improve the general health. As

a general rule, parasites are not entertained in an organism unless its vitality is feeble.

But these thread-worms exist in the adult as a cause of persistent itching at the anus more frequently, I suspect, than is generally supposed; and their presence is not easily detected. In obstinate cases it would be well to examine the part carefully at the time when the paroxysm comes on, and this is usually just after the patient has got warm in bed. The little parasites, which resemble scraps of white thread about a third of an inch in length, may be thus detected just emerging from the orifice of the anus, or squirming about in its immediate vicinity. If not found on the first search, you must try again; and, if you fail after repeated examinations in this way, cause the dejections to be retained in a vessel as they are passed, and scrutinize them carefully. When found, the diagnosis is clear; but the cure, in the adult, is not so easy. The ova of the parasite seem to be protected by the tenacious rectal mucus which envelops them. Lime-water does good as an alkaline solvent. By retaining for a few minutes after each stool a half-pint or more of water, medicated by the addition of as much chlorate of potash as it will dissolve, with some glycerine, and a small quantity of carbolic acid, I have succeeded in removing them. Fowler's solution of arsenite of potass, and the tincture of the muriate of iron, may be used also to medicate enemata; but, without perseverance in the use of the remedies, the itching is liable to return.*

* Dr. Koreef (*Am. Jour. Med. Sci.*, April, 1849, p. 496, from *Rev. Med. Chir.*, September, 1848) cures *pruritis ani* from ascarides by an infusion of spigelia (3 jss, mannæ ℥ j, aq. bullientis Oj.)—a cupful three times a day, using at

To bring about a permanent cure in this affection, it is often necessary, in addition to the use of local remedies, to inquire into and modify all pernicious habits of life, and improve the general health of the patient by change of occupation and change of air.

It may happen that no local cause whatever can be found for the itching, and in this case it is probably kept up as a symptom of some remote irritation in an internal organ, or of a morbid condition of the nervous centers, brought about by overwork, or, possibly, it is indicative of serious organic disease. Sir Benjamin Brodie mentions the case of a gentleman who was cured of an obstinate pain in the foot by the dilatation of a stricture in his urethra; and I have had reason to believe that itching at the anus, in more than one case, owed its persistence to irritation reflected from the prostatic urethra, even where no stricture was present. Sexual irregularities, so commonly a cause of deranged innervation, may keep up morbid sensibility in this form. It is not an infrequent complaint of those suffering from sexual hypochondriasis. Where there is no local lesion to suggest treatment, the daily application of alcohol, in some form, at first very dilute and afterward increasing in strength as it can be borne without too much smarting, serves to harden the skin and prevent the liability to itching.

Finally, in every case of *pruritus ani* not otherwise explained, you must not forget to examine closely for fistula; for the discharge from a minute

the same time a more concentrated decoction by enema. The disease is said to have yielded to this American remedy after the failure of others in more common use.

orifice, so slight as to escape recognition by the patient, is competent by its irritating qualities, especially in warm weather, to keep up a very unpleasant itching.*

The disease known as *piles*, or *hæmorrhoids*, with the exception of an ordinary "cold," is, perhaps, the most common of all human ailments.

They are small, rounded tumors, generally of a red or purplish color, which form either just without, or just within, the orifice of the lower bowel; hence the distinction between *external* and *internal* hæmorrhoids. They take their origin in over-distended and varicose blood-vessels, principally veins, modified by the mechanical violence to which their position exposes them. There is a network of good-sized veins surrounding the lower end of the rectum for an inch or two, in the rather abundant connective tissue between its mucous membrane and the layer of circular muscular fibers surrounding it, which is known as the "hæmorrhoidal plexus." These empty into the inferior mesenteric vein, which, uniting with others, forms the great portal vein—through which all the venous blood from the abdominal viscera is carried into the liver at its transverse fissure. Remember, if you please, that the veins immediately around the verge of the anus form a continuous network by anastomosis with the hæmorrhoidal plexus of the rectum within. These veins anastomose even in the substance of the sphincter muscle. There is, therefore,

* Gross (*System of Surgery*, etc.; Philadelphia, 1872, fifth edition, ch. xv, p. 655) has a case of what he names "*trichiasis of the anus*," in which, partly owing to the inversion of the hairs around the anus, a wound made to cure a fissure was long in healing, and it was found necessary to clip them frequently. This might be a possible cause for itching, but I have never seen it.

no distinction between external and internal piles that arises from the character of the veins in which they take their origin. The distinction of name lies only in the fact of being outside of the grip of the sphincter muscle, in the one case, or above this and in the cavity of the rectum, in the other. Otherwise, their difference lies solely in the anatomical tissues which surround them.

Now, it is a remarkable fact that none of these veins are provided with valves, and consequently, whenever the abdominal circulation is sluggish or obstructed—as by an overloaded colon, a “congested” liver, or an abdominal tumor, ovarian, perhaps, and in pregnancy—there is a strong tendency to stagnation in its lowermost tributaries—the hæmorrhoidal veins. Hence, the latter are often found in a state of varicose enlargement, with thickened walls and pouch-like dilatations, like the varicose saphenous veins of the lower limbs, and those of the testicle in varicocele, which, in consequence of their dependent position, so frequently take on these morbid changes, although they are provided with valves.

It is not a matter of surprise, then, that this varicose condition should be so common in the veins at the lower end of the rectum; nor yet that printers, hair-dressers, dentists, and others, whose occupation keeps them habitually confined within-doors, in the upright position, should be very liable to hæmorrhoids, and that literary and professional men, and others who sit a great deal, should share this liability. I do not remember ever to have seen an Indian with “piles,” although in early life I saw something of their ailments; and there is no analogous disease in

quadrupeds, where the trunk of the body is prone and not upright in position. In view of its "predisposing causes," therefore, the disease would seem to be an appanage of civilized humanity.

On the other hand, its "exciting cause" is, principally, neglect and irregularity in answering the calls of nature, and the violence thoughtlessly inflicted upon the lower end of the rectum in the extrusion of costive stools by forcible effort.

Under the influence of these causes, a mass of dilated veins projecting into the gut, or at its margin, and subjected to the frequent repetition of bruising in the act of defecation, is liable to constant recurrence of congestion and stagnation of blood in the consequent efforts at repair of the injury; and the connective tissue surrounding the veins becoming infiltrated with exudation, the morbid anatomy of the hæmorrhoidal tumor is thus explained.

I have often noticed in thin-skinned persons, in pulling gently apart the margins of the anus, a circle of good-sized veins, festooned and nodulated, forming, evidently, a portion of a plexus existing *externally*, and therefore free from pressure of the sphincter, but certainly communicating with the plexus of hæmorrhoidal veins within. This venous circle surrounds the orifice just at the ridge that marks the outer verge, and is covered, of course, by ordinary skin, but very delicate in texture. Commonly, these veins are not visible, but they are always present, and liable to become very much distended in the act of straining at stool. It is easy to conceive how one of these nodules thus distended might give way and its contents be extravasated in the surrounding connective tissue.

In fact, I have often had occasion to inspect a globular, painful little tumor just at the verge, dark purple in color, of the size and appearance of a huckleberry or a grape, which had made its appearance after a hard stool, and was causing much anxiety. On incising such a tumor as this, a soft, solid, black, spherical coagulum rolls out, and the walls of the cavity within are seen smooth and shining. This is, perhaps, the most common variety of what is known as an *external* hæmorrhoidal tumor. If not interfered with, such a tumor becomes hot as well as painful. There is more or less capillary congestion and plastic exudation, and in a certain proportion of cases a decided effort at pus-formation—evidently for the purpose of getting rid of the coagulum. In this case, what is called a “marginal abscess” results. This variety of tumor from rupture of a venous pouch is rarely encountered in this form *within* the cavity of the rectum, probably because its walls are more yielding—the rupture occurring while the venous pouch is forcibly pressed against the hard and distended sphincter muscle.*

* I was once called to see a young lady who had been taken with rather free bleeding from the orifice of the bowels as she was dressing for a morning reception. She belonged to a family, several of the members of which had suffered from hæmorrhoids, and I had already advised palliative treatment for the same affection in herself on several occasions, and had even suggested an operation, as she was in the habit of losing blood. At this visit, as the bowels had acted just before, I presumed that an internal hæmorrhoid was still protruding, and that it would be retracted if she resumed the horizontal position, and simply advised her to lie down. At my next visit, I found that, although all protrusion had disappeared on lying down, the bleeding had nevertheless continued for several hours, and to an unpleasant extent. She was anxious for an operation that would rid her of this liability to a recurrence of bleeding, and I made an appointment accordingly. When I came to examine the parts in a good light, under ether, I found at the margin of the anus no less than three well-marked venous pouches, like those pictured by

An external pile, if seen before any venous rupture has occurred within it, would present itself as a round, bluish, venous-looking tumor just at the outer margin of the anus, with the delicate, usually wrinkled skin of the part stretched smoothly over it, a broadish ill-defined base, and generally solitary. This is its simplest form. Instead of forming a solitary pouch or sac, the pile often consists of a mass of dilated tortuous veins and veinules imbedded in deli-



FIG. 1.—Section of an External Hemorrhoid. (Esmarch.)



FIG. 2.—Section of an External Hemorrhoid after injection through the Vein. (Frobiep.)

cate connective tissue. As Esmarch says, "they show within, a spongy, cavernous tissue, the meshes of which are dilated veins" (Figs. 1 and 2). An exter-

Quain,* and in one of them, the largest, a round hole, as though made by a punch, evidently the result of ulceration, terminating in rupture.

Here the wall of the dilated vein had become consolidated with the integument by previous inflammation, so that when the rupture took place the blood escaped externally, and not into the meshes of the surrounding connective tissue, as when the purple, grape-like tumor is formed, as described above. This, then, is a rather rare example of bleeding from an *external* hemorrhoid. The bleeding in this case was precisely analogous to that to which persons with varicose veins of the legs are liable, from thinning, or ulceration and rupture.

I found, also, several well-developed *internal* tumors, to which I applied the ligature, and the patient is now entirely cured.

* *Diseases of the Rectum*, by Richard Quain; reprint, New York, 1855.

nal hæmorrhoid, as thus described, may have existed for some time, for it forms gradually. As a rule, however, a continuance of the causes which produced it and the mechanical violence to which it is exposed during the act of defecation have led to changes, one of which I have described. In another phase the extravasated blood may be diffused throughout the little tumor in the meshes of its connective substance, in which case it shows a solid, blackish surface on incision, and can only be emptied by squeezing. These changes in the external pile may possibly take place with but little pain; but, as a rule, there will have been more or less afflux of blood, with consequent exudation and cell-proliferation, attended by pain, heat, increased tension, and swelling. The sum of all this is what is usually called "an attack of piles," and, when there are several tumors involved, the suffering is great, and there is fever.

An attack of piles may end in several ways: the symptoms may subside entirely, and the effused blood be absorbed, leaving a flabby tab of skin as the only remains of the tumor; it may subside partially, only the acute symptoms passing off after a week or more of suffering, leaving the tumor larger and harder, from cedema, but no longer acutely painful; or, finally, the "inflamed" pile may break down in suppuration, and, having discharged its contents, leave a flabby tab, as before.

Now, to complete my account of *external* piles, I would say that you will always encounter them either in one of these forms or in the shape of one or more tumors at the margin of the anus, changed in the manner I have just described, and presenting one of

the three following conditions: 1, attended by more or less heat, pain, and tension from recent formation, or incidental traumatism; 2, free from these symptoms—simply grape-like; 3, as flabby tabs, or dog-eared folds of integument.

Of these, the first is the most frequent in occurrence, and the most serious, in view of the great pain and inconvenience it occasions. The local congestion and excitement is the main feature with which we have to deal. As I have said, this is often accompanied by general disturbance of the system in the way of fever and arrest of function in the blood-making organs, with furred tongue, and absence of appetite. The pain, to relieve which is the most prominent indication of treatment, has in all likelihood been so great as to have prevented the patient from attempting a passage from the bowels, so that your first duty will probably be to secure the performance of this necessary function by a dose of castor-oil, which, for these cases, is the best laxative; and, with this, order a warm bath, if feasible, and afterward a poultice of flaxseed-meal or slippery-elm flour, with lead-water or opium in the poultice, if you choose.

If you have an opportunity to treat the case at its commencement, pounded ice is an excellent sedative; it allays pain, and may cause the inflammation to abort. It should be applied in a partially filled bladder, and molded to the part. But, later, warm, relaxing applications will be found to answer best.

Let your patient keep his bed, and lie as much as possible with the hips elevated. After the oil has acted, give enough precipitated sulphur, with bitartrate of potash, or some other saline, from day to day,

to keep the stools soft and unirritating, and to act as a cooling sedative to the system at large. I have not formed a favorable opinion of the action of leeches upon inflamed hæmorrhoids.

If the patient has been seen early, these measures should bring relief in a day or two. With the subsidence of excitement, the little tumor will gradually shrivel away into a small flap of integument, which, with prudence in avoiding costiveness and with proper attention to cleanliness, will rarely cause trouble. If the symptoms of excitement persist, and pus-formation takes place, the best course will be to incise the tumor freely, as I shall have occasion to advise when we study abscess. In some cases the tumor becomes œdematous in consequence of retardation in its circulation by the grasp of the sphincter muscle, which, irritated by its proximity, also adds greatly to the local pain by its spasmodic and irregular contractions. A large œdematous external hæmorrhoid is sometimes molded into an odd shape by the pressure of the nates; but, by the time the watery swelling has come on, the extreme pain has usually culminated, as in a gum-boil, and it may safely be left to itself. At this stage the emollient anodyne poultice should be replaced by an astringent: lint, saturated with strong Goulard's extract; or the ointment of nutgalls, combined with stramonium ointment, if you can get it freshly made after the American formula. These tumors often take a long time to subside and disappear; but, as soon as the pain has ceased, the patient becomes reassured, and is satisfied to leave the remainder of the cure to nature, aided by your advice.

Suppose that an external pile should not disap-

pear by absorption, as it usually does, but remain as an excrescence, painless but troublesome, and liable to become again inflamed. In this case it may be excised; and, where it has become indurated as a consequence of inflammation, it is better, after dividing the integument by an incision radiating from the anal orifice, to separate the skin from the tumor well down to its base, and, seizing it with the toothed forceps, remove it by a pair of scissors, curved flatwise of their blades. You incur no danger of contraction of the orifice by this mode of operating, which, if you removed a tumor together with its integumental covering, might possibly follow.

The little flaps of skin—the third form of external piles, which, in fact, are nothing more than the shriveled remains of the first two varieties—when it is necessary to remove them, may be excised with the curved scissors without any previous dissection. In the second variety, when you have divided the delicate integument and turned out the extravasated blood, as already mentioned, no further treatment is usually needed. If there should be any tendency to bleed, use the dried persulphate of iron and lint; and remember that incisions, in this region, should radiate from the anus.

As a rule, I would advise you not to remove external piles, except for good reason, as, in my experience, with ordinary attention to personal habits, they cause little inconvenience; and troublesome inflammation is liable at times to follow these little operations, which, mainly through the uncontrollable pinchings of the irritated sphincter, is so painful and tedious as to make you regret your interference.

The *diagnosis* of external piles is often a matter of no little obscurity to the beginner. By the older authors many other morbid growths in this region were included under this title—under the vague designation of *condylomata*. The latter term is strictly applicable only to the dog-eared flaps of skin enumerated as the third variety of external piles. But, besides these, warty growths, enlarged sebaceous follicles, the elevated mucous patches of syphilis, as well as the tertiary gummatous lumps that occasionally make their appearance near the anus, have all been vaguely described as condylomata, and, by inference, included under the designation of external piles. Neglect of a conscientious inspection and scrutiny of the seat of these affections in hospital patients, in whom they are principally encountered, and the imperfect knowledge of the manifestations of syphilis in this region, combine to obscure their diagnosis; but I trust that the description I have given you of the real nature and mode of formation of external piles will remove any difficulty in distinguishing them from the other affections with which they have been grouped.

You will meet with irritated and so-called inflamed external hæmorrhoids most frequently in persons under middle age, who have not yet learned that it is unwise to neglect and abuse themselves; and, in addition to the treatment I have recommended for the disease when present, it will be well for you to assist your patients in learning, from their experience, how to prevent its recurrence in future. There is much occasion here for good advice, for the hygiene of the function of defecation is, mainly through false delicacy, a sadly neglected topic.

Simple, well-selected food, and a sufficient amount of active out-door life, are the best means of removing predisposing causes. You should strive to remedy temporary or habitual constipation by other means than cathartic pills. An India-rubber tube, for self-injection, is one of the best substitutes for drugs, and the judicious use of aperient mineral waters is capable of doing much good; but it is still better, if possible, to find out the cause of the unnatural condition, and remove it by hygienic means. Successful preventive treatment is the best proof of skill founded upon science.

The points to be remembered concerning external piles are: 1, their identity as to etiology and pathology with internal piles; 2, their preventability by intelligent hygiene; 3, the liability to mistake other growths at the anus for external piles; 4, that they may become inflamed without involving internal hæmorrhoidal tumors if these are present; and, finally, the dominant influence of the powerful external sphincter muscle in obstructing their circulation, in aggravating pain when they are inflamed, and in delaying their cure.

LECTURE II.

INTERNAL HÆMORRHOIDS.

Internal hæmorrhoids, or "bleeding piles," constitute a disease which is more serious than the *external* variety, inasmuch as it tends to undermine the general health of the sufferer, to interfere materially with his usefulness, and even, in extreme cases, to place life in danger. It is more insidious in its approaches, and more persistent in character.

We have seen the external form of the disease characterized mainly by inflammation and pain, and these features are temporary. *Internal piles*, on the contrary, form more slowly, attain greater development, and are less frequently the seat of acute pain and swelling; they are more chronic in their nature, invariably complicate themselves with more or less prolapse of the mucous membrane of the rectum, and, as their name implies, are a constantly existing source of loss of blood, or hæmorrhage. It is this latter feature which renders the disease a serious danger to health and life, and the means to be adopted for its prevention and cure of so great interest to the surgeon.

I have already spoken of the morbid anatomy of the hæmorrhoidal tumor, of the causes which tend to produce it, and of its mode of formation. Situated

immediately beneath, and involving the actual structure of the mucous membrane of the rectum just above the external sphincter-ani muscle, and rarely more than three or four in number, these little rounded masses of enlarged veinules and arterioles, imbedded in condensed and hypertrophied connective tissue, having invested themselves with its mucous lining, tend to project gradually into the cavity of the bowel; and, as soon as they have attained sufficient size, they form, of course, more or less of an obstruction to the free passage of its contents.

Liabile, then, to daily forcible contact with the fecal mass in process of extrusion from the gut, the tumors themselves are gradually pushed before it, and, through the yielding of the loose connective tissue between the mucous membrane of the rectum and its muscular coat, they are finally extruded through the anus with a stool, carrying with them more or less of the mucous membrane in which they have grown; and this constitutes the "prolapse" of which I have spoken. The sphincter muscle, contracting promptly around their membranous attachment, prevents the immediate return of the mass, and it remains protruding at the anus—a cluster of livid, half-strangulated vascular tumors, from the surface of which, as the patient sits in the water-closet, the blood oozes and drops rapidly, or even actually flows in a stream. The presence of the protruded gut bearing the tumors gives the sensation of something more to be expelled from the anus, and the patient consequently strains in order to expel it, and thus unwittingly increases the loss of blood and aggravates the prolapse. On resuming the upright position, the

protruded mass is spontaneously retracted within the anus, the relaxing sphincter permitting it to slip back into its place.

But, after the process I have described has been frequently repeated, recurring as it does with every stool, the hæmorrhoidal protrusion, having assumed more extensive proportions, does not retire of its own accord within the bowel; and the patient, having recognized by this time that his "body comes down," is obliged to put it back by his own effort, often by tedious and painful manipulation. Sitting for a time upon the arm of a sofa or easy-chair after defecation is a common habit of sufferers from hæmorrhoidal prolapse. A patient from a distance once showed me a large cobble-stone which he carried in his trunk, and on which he used to sit after a stool in order to coax up the protrusion. The stone was wedge-shaped and resembled polished mahogany. The repeated stretchings to which it is subjected, by the daily protrusions of the hæmorrhoidal mass, impair the contractile power of the sphincter muscle in some degree, so as to diminish its reliability as a sentinel, and after a while the piles will come down at other times than at stool, slipping through the relaxed sphincter by the mere pressure of the superincumbent viscera. As soon as the protrusion has occurred, however, the sphincter is stimulated to increased contraction, and the protruded parts are so painfully pinched that the sufferer is obliged to retire and "put them up."

A prominent lawyer, a sufferer from hæmorrhoids, once told me that this accident always happened to him in court when he rose to address the bench; and that he had learned how to prevent it, whenever he

had an important case in hand, by securing an action from the bowels the evening before. If he went to the closet in the morning, he was certain to be annoyed, and, as he remarked, "he could no more argue a case with his piles down than he could square the circle."

The explanation of this not uncommon feature of the disease is, simply, that the sphincter, which has been overstretched and partially paralyzed by the protrusion at stool, requires some hours to recover again its full power of contraction. I have often recommended patients liable to this trouble to visit the water-closet, as a habit, before retiring at night, which, for a time, will prevent it. The condition is analogous to that of a patient suffering from hernia, or of a woman with falling of the womb; but, although a truss will relieve the rupture, and a "supporter," perhaps, may help the prolapsed uterus, I warn you not to trust to pads and mechanical appliances as a remedy for piles which "come down." *

It happens sometimes that, when the patient retires to reduce the prolapsed hæmorrhoids, the clothing is found saturated with blood; and this always causes

* A French surgeon (Le Polletier de la Sarthe, *Des Hæmorrhoides et de la Chute du Rectum*, Paris, 1834) devised a sort of pewter plug to be worn for the cure of internal piles by direct pressure. It had a narrow neck an inch long to be grasped by the sphincter, a bulb at its upper extremity which was lodged just above the sphincter and made pressure upon the piles, and a piece below at right angles, which lodged in the cleft of the nates. This contrivance had much vogue for a time, and no doubt served as a palliative to prevent immediate re-descent. Mr. Henry Lee (*Lectures on Practical Pathology and Surgery*) more recently has spoken well of it as a palliative. I need hardly say that it possesses no curative value, and has justly fallen into disuse. This instrument belongs to the same category with the truss-like pads and pile-supporters; but I have never seen any permanent good from their use, and rarely any real comfort in the way of palliation.

much alarm, although, perhaps, an equal amount of the precious fluid may be lost daily at stool without the patient's knowledge.

Another phase of the disease when fully formed, happily not very common, is the *irreducibleness* and *strangulation* of the protruded hæmorrhoidal mass, the patient's efforts to replace it having failed, generally through delay. A gentleman going out to ride in a light wagon after breakfast, felt his piles slip out as he was stepping into the vehicle, and, not wishing to detain his companion, did not attempt to replace them until his return, when he found them quite hard and painful, and, he was unable to accomplish the reduction. When I saw him next day, he was suffering greatly; the intense congestion from strangulation had passed into the stage of acute inflammation; he had had no passage from the bowels, and was quite feverish. The part was so exceedingly painful that he could not bear to have it touched. But he consented to inhale a little chloroform, and, as soon as its effect was produced, I anointed the mass freely with cold cream and reduced it. He had no further pain.

You may be called to see a case of strangulated internal piles where there may be a suspicion that the protrusion is nothing more than a simple, uncomplicated prolapse, and here an accurate knowledge of the appearance presented by the piles under these circumstances will be required for a diagnosis. As this kind of knowledge can only be got by educating the eye, I would urge you never to hesitate to inspect, as well as to examine by the touch, where it is likely to be of advantage to your patient. Where internal

piles are protruding externally and are strangulated, you will see a dark-red, oval, congested mass, with several somewhat indistinctly defined tumors slightly projecting from it, on one side of a deep, narrow, central cleft, which marks the entrance of the everted bowel, and the same, or perhaps only one tumor on the other side of the cleft. On closer inspection, you should be able to make out where the substance of the tumor ends and the surface of the mucous membrane on which it is seated begins—for more or less of the mucous membrane in which they grow is of necessity extruded with the tumors, and its surface will be distinguishable by its greater smoothness and its lighter tint of color. At either side of the base of the protruding mass you will see a still smoother, livid, puffy roll of very delicate common integument, everted from just within the orifice of the anus, and this is separated by a shallow groove from the neighboring skin of the buttock. Surrounding the protruded mass is the stretched and irritated sphincter. It is this excited sphincter which is the obstacle to reduction. By introducing a well-greased finger into the central cleft, you may open a passage through which the protruded mass may be gradually returned, in the same manner as you would reduce a strangulated hernia by taxis. I have even introduced two thumbs and stretched the muscle. But these proceedings require great tolerance of pain on the part of the patient. In most cases, it would be better to propose anæsthesia—with the twofold view of facilitating reduction, and, in case of failure, of adopting at once the more radical measure of removing the tumors; for, unless sloughing has actually commenced,

experience has proved that this is the proper course. I once had a case which will illustrate the result that follows strangulation when unrelieved: A lady, who had suffered for a long time from internal piles with protrusion and frequent bleeding, found herself one day unable to replace the tumors; and, although they soon began to give her excessive pain, she took to her bed, and declined aid through fear of exposure. It was nearly a week afterward when I saw the patient and heard her account of the intense suffering she had experienced. I found an offensive, black, sloughy mass, for which I could do nothing but order an application of chloride of soda to relieve the odor, which, in fact, had induced her to see me, and administer anodynes and gentle stimulants. Within two days afterward, the whole mass came away while she was sitting on the night-chair, and she lost several ounces of blood; but after this she got well promptly, and found herself, to her surprise, entirely cured of her troublesome piles. Here, the inflammation following the intense congestion caused by strangulation had advanced rapidly to its termination in mortification, and the whole gangrenous mass sloughed off, leaving a healthy granulating surface, which rapidly cicatrized, and, by its contraction, cured the disease. This is Nature's mode of cure; it is rough, and not free from danger, but effectual. The danger attending it is not so great to life as it is of subsequent stricture of the rectum, if perchance the slough should have involved a complete circle of the mucous membrane. The cure is effected by the destruction of the hæmorrhoidal tumors—the source of the bleeding; and the consolidation of the lax connective tis-

sue between the mucous membrane of the rectum and its muscular coat, and the closer adhesion between these parts which takes place while the consequent ulcer is healing, prevent a return of the prolapse.

The surgeon, taking the hint from the result of these cases, brings about a radical cure in a somewhat similar way, but, thanks to the improvements of modern surgery, attended by little pain and no danger. He selects his opportunity, and effects the destruction of the tumors by safe and simple means, and relies upon the changes which attend the process of repair to consolidate the parts and, in this way, to cure the prolapse of the bowel. This proceeding is one of the most satisfactory in its results of all the operations of surgery.

But, before considering its details, we must look further into the causes and pathological peculiarities of internal hæmorrhoidal tumors, as explaining their characteristic symptoms, and furnishing a basis for preventive treatment and possible palliation. We shall thus be able to decide as to the class of cases which absolutely demands a radical cure.

As to the *causes* of internal piles, we must keep in view the fact that the veins of this region have no valves, that they can all be injected from the trunk of the portal vein, as Verneuil has demonstrated,* and Ribes, before him, who has also taught us that, as the veins of the lower rectum pass out of the gut from its mucous membrane, they traverse its dense muscular coat through elliptical openings, like button-holes, without any fibrous edging like that in the diaphragm

* Mollière, *Maladies du Rectum*, Paris, 1878, p. 404.

which transmits the *vena cava*, and are therefore liable to constriction and strangulation whenever the muscular fibers are thrown into strong contraction, as in defecation, whence arise congestion and over-distention of the extreme capillaries and veinules. These latter form well-defined groups, or districts, under the mucous membrane of the lower end of the gut, each group collecting blood separately for its venous outlet.*

In habitual congestion and over-distention of the group of capillaries, arterioles, and veinules, which contribute to each rectal vein, the internal hæmorrhoid takes its origin. It is not difficult to understand, then, why torpidity of the liver from rich living, and a sluggish circulation from lack of muscular exercise, are detailed among the causes of bleeding piles.

* Ribes, in his celebrated memoir (*Mémoire de la Société d'Emulation de Paris*, tome ix, p. 85), gives the result of more careful and extended research in the dead body, in relation to the mode of formation of internal piles, than any other authority. He considers that the absence of valves and the necessity of carrying blood upward against gravity favor stagnation and over-distention in the thin-walled veins of the hæmorrhoidal plexus. When these veins, therefore, become varicose at points, the bulging nodules thus formed project inward, pushing the mucous membrane before them, and are visible on the inner surface of the rectum as bluish eminences; they are, in fact, commencing piles. Now, although the lining membrane of the rectum is copiously lubricated with mucus, the descending fecal mass habitually forces it downward in circular transverse folds, three or four of which are pushed, with the extruded fæces, through the sphincter, and project for the moment externally as a protrusion of a vivid-red color, marked by transverse wrinkles—as seen in the horse. These wrinkles are formed by that portion of the mucous membrane which corresponds to the hæmorrhoidal plexus, and to the bluish nodular prominences noticed upon its inner surface at the lowest part of the rectum. Commencing hæmorrhoids, when successfully injected from the inferior mesenteric vein after death, look as if the mucous membrane covering them had been removed by absorption—they are so blue, prominent, and shining; but, with a little care, the membrane can be dissected off from them, preserving its normal proportion, and leaving the little venous pouches isolated, except at the points of attachment to the venous trunks.

In the early forming stage of the internal hæmorrhoid the mucous membrane covering it takes on a congested, velvety, granular, strawberry-like aspect, and in this condition it is apt to bleed freely and habitually. An arteriole not unfrequently ruptures, in consequence of obstruction in its capillary area, and this explains why the blood lost at stool is often of a bright arterial tint, and why a minute stream sometimes spins out to some distance. It is to be remarked that hæmorrhage of this kind, from forming hæmorrhoidal tumors, is competent to give rise to all the symptoms of anæmia in comparatively early life, while there is as yet no noticeable protrusion, and little, if any, local uneasiness. It is in this phase of the disease that the application of strong nitric acid to the altered mucous membrane covering the tumor, as recommended by Houston, of Dublin, is often efficient as a palliative.

As the tumor continues to grow, its mucous covering, thickened by exudation from bruising and exposure, becomes more smooth and less vascular, and bleeding of this kind is less urgent. In women, where internal piles take their origin in the venous distention caused by the mechanical pressure of the gravid womb—the same mechanism that explains the over-stretched veinules so often seen about the ankles, and the varicose distention of the veins of the leg and thigh—the kind of hæmorrhage I have been describing occurs much less frequently than in men. In women, internal, and indeed external, piles as well, are often made up entirely of over-distended veins. They are more voluminous and more blue in tint—the thinner and whiter integument contributing to

this feature when they are external, and the internal tumors usually lack the velvety appearance so common in men. Notwithstanding the great provocation to venous stasis caused by pregnancy, and by uterine enlargements and displacements, I have not met with internal piles demanding a radical cure as frequently in women as in men. They bear loss of blood better, and are more reluctant to ask for relief, but the use of stimulants and excess in eating in men seem to more than counterbalance the uterine causes of piles. It is indisputable, also, that women err more frequently in neglecting the calls of nature. The greater capacity of the pelvic cavity may lessen the influence of these causes.

In numerous cases requiring operation, I can say that an hereditary tendency to hæmorrhoids has been verified in a larger proportion of women; and, in both sexes, a gouty constitution exists in a large proportion of those who suffer from bleeding piles. The tendency to local congestion in persons of this diathesis seems to affect, by preference, the hæmorrhoidal plexus.

But none of these predisposing causes are as actively efficient as neglect and irregularity in evacuating the lower bowel, prolonged straining in the act, and sitting long at stool, all of which directly excite the disease.

Internal piles belong to the period of middle life. In persons who inherit the tendency, they may appear, when invited by faulty habits of life, as early as puberty. Allingham verified a case in a child of three years.* Toward fifty, or soon after, the tendency to

* *On Diseases of the Rectum*, third edition, London, 1879, p. 92.

bleed generally grows less, and finally disappears—the tumors, if indurated, remaining, together with the tendency to prolapse; but, as a rule, they shrink, and the malady ceases to give much trouble unless the prolapse is bulky.

Where the disease has existed for a long time, the sphincter has generally lost its full contractile power, and in elderly persons it is liable to become atrophied. This condition of the sphincter favors prolapse, and also allows too free escape of gas, and sometimes of fæces, if the bowels are loose. Loss of full natural sensibility at the lower end of the bowel, from its habitual abnormal condition, is not unfrequently a complication of this infirmity.

Pain is not a prominent symptom of bleeding piles, unless the tumors become angry from bruising, and remain within the grasp of the sphincter. It is generally relievably by complete reduction and rest on the back—unless what is called "a hæmorrhoidal fluxion" happens to be present. This term, transmitted to us by the humoral pathologists, was applied to a fancied afflux of blood to which the parts were supposed to be subject, causing a local sense of fullness unless the piles bled. It was met by the application of leeches to the anus as a substitute for the desired flow of blood.* Such symptoms are attributed at the present day to obstructed hepatic circulation, or local,

* This practice is based on the fanciful idea that loss of blood from piles subserves a useful purpose in the economy, an idea very prevalent at the time when bloodletting was in common use as a remedy. In the *Journal des Connaissances Méd. Chirurg.*, September, 1836, there is mention of the case in hospital of a medical student of twenty, whose nervous symptoms were gravely ascribed to want of a hæmorrhoidal discharge, and treated by applying a cupping-glass over the anus to bring it on. Trousseau actually suggests, in order to provoke an afflux to this region, the use of suppositories of tartar emetic.

gouty congestion, unless, as in sexual hypochondriasis, they are purely neurotic. In middle life, and in a well-nourished subject, they would be properly treated by a saline laxative, preceded possibly by a blue pill, and followed by colchicum and restricted indulgence in meat and wine. Where the tumors escape externally and become strangulated, as already described, the pain may be excessive.

The cardinal symptom of internal hæmorrhoids, to which the disease indeed owes its name, is the loss of blood. This is marked by its persistency, often through many years, and by certain special characteristics, namely, that its existence is often unsuspected, and its amount usually under-estimated in consequence of its insidious and secret mode of occurrence, and finally by the apparently disproportionate degree of debility, amounting not infrequently to profound anæmia, by which it is followed. The victim of this comparatively painless affection suffers in most instances from languor and indisposition to exertion, from dyspepsia and flatulence, from short breath and palpitation—in short, from all the symptoms of habitual loss of blood; and at length presents himself for advice with a sallow complexion and the air of an invalid, complaining very likely of his liver, and without any serious suspicion that all his symptoms are caused by the daily loss of it may be only a few spoonfuls of blood from bleeding piles, of the existence of which he is hardly aware.

Protrusion after defecation is the symptom which most frequently commands the patient's attention; but, if the protrusion retires spontaneously, he will not attach as much importance to it as when, per-

chance, it may slip down after unusual effort at some other time than at stool, and especially if there has been difficulty in returning it. As bleeding is usually more copious before the tumors have fully formed, it may be that you will have to inquire carefully as to the existence of any protrusion at stool, and that it will be only fully recognized after your inquiry; and in many cases even the bleeding will pass unheeded unless it occurs in considerable quantity, the great frequency of the disease leading many persons to regard it as of little moment. It is only after a patient's attention has been directed to these symptoms, and, in many instances, after he has been warned as to their significance, and of the possibility of danger, that he will begin to realize the existence of a leakage that must be stopped. Do not neglect, therefore, in persons who are weak and sallow without obvious reason, to inquire particularly if there is any protrusion after going to stool, and if blood has been noticed. In case of doubt, it is well to place the patient in position and pull the borders of the anus gently apart, when, with a very little effort on the part of the patient, an internal pile may be brought in sight. You will not always be able to detect the presence of internal hæmorrhoids by the finger *in recto* while the patient is in a horizontal position, unless the tumors have become indurated. Otherwise, they may be so soft and flaccid, because they are undistended, as to escape recognition by the touch. When the patient is asked to bear down, as in straining at stool, they will become distended; and, after an injection of warm water, they will generally protrude on straining. But it is after gentle dilata-

tion of the anus under an anæsthetic that internal piles come in view most satisfactorily, and this is the manœuvre I adopt when about to operate upon them.

We may conclude, then, that the existence of an habitual protrusion after defecation, and the detection of even occasional bleeding, will justify an operation for radical cure. Bleeding without protrusion demands inspection under ether, but may be, possibly, remedied without a radical operation. In protrusion without bleeding, if habitual, after middle life, hæmorrhoidal tumors should be removed, inasmuch as they damage the retentive power of the sphincter, and favor increasing prolapse.

Is there a possibility of averting the necessity of operative interference by palliative measures? The local application of *nitric acid*, and the habitual use of *injections of cold water*, are remedies which have a certain degree of reputation, and I will endeavor to give you an idea of their exact value.

In young, full-blooded subjects, the hæmorrhage that attends internal piles in their forming stage is sometimes greater, in proportion, than the prolapse or protrusion; and you will find, perhaps, on examination of the part, an intensely red, vascular, velvety surface, limited in extent, from which the bleeding takes place, and no fully formed tumors whatever. In such cases as this, nitric acid is an excellent remedy; and, if judiciously applied, it will cure the tendency to hæmorrhage. You use the pure, strong acid, applying it with great caution—so as not to invade surrounding healthy surfaces—by means of a glass rod with a rounded end, or a flat piece of wood, having previously dried the altered surface. A yel-

lowish eschar results, attended by slight local vascular excitement accompanied by exudation, which tends to consolidate the unnaturally vascular tissues in its immediate neighborhood; and to this, and the contraction which follows the healing of the superficial ulcer left by the falling of the eschar, the benefit produced by nitric acid is attributable. For cases of this kind, and of this kind only, the acid is a good remedy; and, if you can induce your patient to live judiciously afterward, you may possibly cure him permanently by its use. But, where tumors have already formed and the complication of prolapse has commenced, you can expect little good, unless it be a temporary diminution of the bleeding.*

*Dr. Houston's original paper *On the Use of Nitric Acid as an Escharotic in Certain Forms of Hemorrhoidal Affections* (in the *Dublin Journal of Medical Sciences*, March, 1843, with a sequel in the same journal for September, 1844), contains an admirable description of several varieties of internal piles: (a) those composed entirely of tortuous varicose veins which can be readily compressed and emptied of blood, are covered by a smooth and normal mucous membrane, and are entirely painless; (b) the same tumors, more or less solidified as a result of the mechanical violence to which their exposed situation subjects them, causing venous rupture and inflammatory induration; and (c) either of these tumors with the mucous membrane covering them changed, either wholly or in patches, into a soft, scarlet-colored, velvety, vascular surface, oozing blood on the slightest provocation. To this latter strawberry-like, vascular pile, and to this only, Dr. Houston found the application of the strong nitric acid act efficiently, by promptly destroying the vascular surface and arresting further loss of blood. For the other varieties he does not advise it. His operation was painless; he oiled the tumor after the application, returned it, and did not find it necessary to confine the patient to bed.

Mr. Henry Lee, of London (*Lectures on Practical Pathology and Surgery*, London, 1870, third edition, vol. i, p. 149, *et seq.*), tells us that he adopted Dr. Houston's remedy, but endeavored to extend its use, he thinks with success, to the tumors consisting of varicose veins, as well as to their vascular surfaces, applying the strong acid, and following it by chalk and water. He also applied a steel clamp to the base of the tumor, cut it away, and then applied the strong acid to the remaining surface. He went further, and tried the actual cautery, in place of the potential, after applying a clamp—all this more than a quarter of a century ago; and, on the whole, he regarded these opera-

The value of cold-water injections is mainly due to the effect of *cold*, in causing contraction of the unstripped muscular fibers in the walls of the varicose blood-vessels of the rectum, and in the muscular coats of the rectum itself. Hence, when thrown into the bowel before a stool, besides softening the fecal mass and facilitating its expulsion, they tend to shrink the vascular hæmorrhoidal tumors and to render the surrounding tissues firmer, and thus to diminish or pre-

tions as improvements. But he frankly details cases in which the acid failed—tumors consisting of veins covered by an unchanged mucous membrane. Here no relief from pain, or prolapse, or bleeding, followed until after repeated applications; and in one case a pile bled so much as to carry the acid over the adjacent surface of the rectum, causing much subsequent uneasiness. Here is another of his cases: In a married lady, of full, plethoric habit, mother of several children, the tumors for which she sought relief were "firm, solid, oval masses of a bright-red color, covered by smooth mucous membrane." They "were touched with the strongest nitric acid in the usual way. At the expiration of a fortnight they were found to be very much in the same condition as before the acid had been applied" (p. 174). There are other cases to the same effect at pp. 171 and 175.

Mr. Allingham, in his last edition, speaking of internal piles with a vascular surface, says: "It is this variety of the disease which is benefited by the application of fuming nitric acid—I say benefited, not absolutely cured, for in my experience you can not by any means be certain of effecting the latter. Had the use of the acid been restricted to this form of pile, it would not have fallen into such utter disuse as it has; it was the unsurgical attempt to cure large, hard hæmorrhoids with it that brought it into discredit" (p. 97). Our experience in this country confirms Dr. Houston's original judgment as to the value of the remedy—that it is only advantageously applied to vascular, villous, hæmorrhoidal surfaces; and the tendency to employ it more generally as a remedy for all variety of piles, and for the prolapse attending them, is to be regretted, for, as in the cases cited from Mr. Lee, and the confirmation brought, after many years, by Mr. Allingham's very large experience, it is evident that the proceeding has not proved effective. Nor is it free from danger, for, unless "the strong acid" is used with great discretion, it is liable, as we have already seen, to do harm. Dr. Whitehead reports a case of stricture (in *American Journal of Medical Sciences*, July, 1872, p. 114) at and around the anus, which followed an attempt to cure hæmorrhoids by nitric acid; and I have knowledge of several similar cases. For these reasons I think that the use of the strong acid should be restricted to limited, velvety, bleeding surfaces, and as a palliative for bleeding; and that it should be regarded as a dangerous remedy except in skillful hands.

vent protrusion. It is well to observe that there are two distinct palliative effects to be secured from injections of water: the first to soften the stool and aid its passage, so as not to drag down the piles; the second to constrict, subsequently, the relaxed parts. These objects are somewhat incompatible. The best result is attained by throwing up at first a larger quantity of water—not absolutely cold, even tepid, if there is constipation—to bring away the stool, and afterward following it by a smaller amount, say a tumblerful of water as cold as can be comfortably borne, and leaving this to be absorbed. I may add that Mr. Allingham mentions favorably the “strong carbolic” as a substitute for nitric acid as an application to vascular and granular surfaces; and also that he praises the effects of the sub-sulphate of iron in the form of a suppository (gr. ij to gr. v of cacao-butter). Of the latter salt I have had much experience, and can not speak of it too highly. It has no escharotic or irritating qualities (like the perchloride); in fact, it seems to control increased vascular action as well as pain. From recent experience with the thermo-cautery of Paquelin, I am disposed to regard it as more manageable than nitric acid, and at least equally efficient; but the idea of the actual cautery is repulsive to timid patients. Where an anæsthetic is necessary, I should decidedly prefer it; but, when a patient submits to anæsthesia, it would be an exceptional case in which an operation for radical cure should not be substituted for mere palliation.

The use of these remedies as indicated, together with such modification in diet, habits of life, and hygienic surroundings, as your science and tact may

suggest, comprise the most efficient palliatives at your command; and, in the event of their failure, you are justified in advising and performing the operation for radical cure.

The means which have been employed to destroy the tumors are various; I have tried them all except excision, and can confidently recommend to you *strangulation by the ligature* as the safest, surest, and most manageable procedure.

The use of the knife or scissors was fully demonstrated by Dupuytren's experience to be dangerous; he lost several cases from hæmorrhage, which comes on insidiously after the operation—the blood not escaping externally, but accumulating gradually in the cavity of the bowel.*

*The following case, reported by Dupuytren's clinical assistant, illustrates the danger of excision of internal hæmorrhoids, as well as the style of operating fifty years ago: The patient, a wealthy banker, lay on the edge of the bed, the thighs separated. Violent straining protruded the hæmorrhoids, which were immediately seized with forceps with large blades, and excised—not without much trouble. No external hæmorrhage manifested itself. M. Dupuytren did not leave the patient; at the end of a quarter of an hour he perceived him become pale, and gradually fall into a state of weakness more and more decided; the pulse became small, a cold perspiration covered his body, and he felt a sensation of heat in his abdomen, which was gradually ascending. From these signs the professor could not doubt that internal hæmorrhage had ensued. He immediately recommended the patient to make expulsive efforts, and a great quantity of scarcely coagulated blood was discharged. Cold injections proved useless; the hæmorrhage was not stopped. Then a pig's bladder, stuffed with charpie, was introduced into the rectum, which succeeded completely, but it was kept in place only with great difficulty, involuntary efforts on the part of the patient having displaced it several times. This hæmorrhage weakened the patient very much, and would undoubtedly have been fatal if it had not been arrested so promptly. After this case, Dupuytren adopted the use of the actual cautery, which he always had ready, heated, and generally applied it after cutting off the tumors, until, finally, he gave up the operation (Abstracted in *American Journal of the Medical Sciences*, vol. xii, 1833). Jobert, another Parisian hospital surgeon, sought to improve on Dupuytren's plan of excision, "as this was sometimes followed by hæmorrhage, in spite of the actual cautery," by pulling down the internal piles with hooks, slowly excising them, and tying

The actual cautery was in great favor with the older surgeons, and justly so, although, as formerly applied, a repulsive procedure, and not free from danger of subsequent stricture. At the present day, with anæsthesia, and the power to restrict its action by means of clamps, and with the ingenious and convenient thermo-cautery of Paquelin at our command, these objections no longer exist, and there is no limit to the useful application of the remedy. It is advocated warmly by some English surgeons, and, according to Esmarch, is the favorite method in Germany. The actual cautery, with our present facilities of applying it, stands very nearly on a par with the ligature, and we can choose between them according to the requirements of the case and our own convenience, but in the choice it is desirable to avoid partisanship.*

the bleeding vessels, both veins and arteries, as they were divided (*id.*, vol. xxv, 1839, p. 471). Abraham Colles, of Dublin, was about this same time in the habit of "snipping out" internal piles, or "vascular tumors," as he calls them. He cut through the tumor, and endeavored to leave the stump in the bight of the sphincter, by which manœuvre he proposed to prevent bleeding—manifestly an unsafe proceeding, and subsequently abandoned (*Dublin Hospital Reports*, vol. v, 1830). According to Esmarch, Sir Astley Cooper lost several patients by hæmorrhage after excision of internal piles (Pitha and Billroth, *Handb. der allgem. und speciallen Chirurg.*, tome iii, second part, Erlangen, 1872).

* From a communication to the London *Lancet*, April 20, 1878, p. 561, entitled "A Fourth Series of Cases of Hæmorrhoids and Prolapsus of the Rectum, operated on by the Clamp and Cautery," by Henry Smith, F. R. C. S., Professor of Surgery in King's College, and surgeon to King's College Hospital, I gather the following: Three years ago the author had 400 (now, 530) cases. In all, one death. Has done the operation in 215 consecutive cases without serious mishap. Great previous loss of blood, even to blanching, did not seem to retard prompt recovery. Has lost a case from pyæmia after ligature of hæmorrhoids. Thinks cautery the best antiseptic. Uses the old-fashioned cautery. In the last 100 cases he acknowledges seven instances of hæmorrhage after his operation. Does not use enemata after the operation, preferring laxatives. Has had no case of erysipelas. In this last series of 130 cases, he has had three cases of abscess and fistula as direct result of his operation. In three

Of the potential caustics, nitric acid, for radical cure, has proved slow and unsatisfactory. Caustic potash, once in general favor, is very painful and unmanageable; its use was last revived by Amussat, but his proposition met with scant favor, and is not now in use.*

The injection of piles with substances possessing specific properties—carbolic acid, for example—has lately attracted much attention. The popularity of this substance has gained for it much favor. From the experience I have been able to gather, I should say that the injection of a hæmorrhoid still soft throughout, and situated well above the sphincter, with a weak solution—say, one grain of the pure acid to ten minims of water—will probably cause the tumor to shrink without sloughing or ulceration, and with but trifling pain; and that, by careful repetition of the operation at intervals, both piles and prolapse, in cases of moderate gravity, may be cured without confinement to bed. But, where a stronger solution is used, sloughing is likely to occur, and, if the inflamed parts come within the grasp of the sphincter, great suffering may ensue.†

cases, contraction of the bowel has occurred as a consequence (in two, certainly), as he acknowledges, of the operation. Advises the introduction of a bougie for a month where the operation has been very extensive.

* In a letter to Dr. Selden, of Virginia, published by him in the *American Journal of the Medical Sciences* (April, 1846, p. 342), Amussat gives a description of his operation for the radical cure of internal piles, which consisted in constricting the base of the tumor by a peculiarly constructed forceps containing in its blades a stick of prepared caustic potash, until a slough was caused.

† This is in accordance with the results of the cases collected by the Committee of the Therapeutical Society of New York (*New York Medical Journal*, March, 1879). Professor E. Andrews, of St. Louis, has collected some thousands of cases treated by carbolic acid; and his conclusions, although in

I have tried injecting a solution of the sub-sulphate of iron, and have found it inefficient, and sometimes very painful. Ergot, in the form of fluid extract—3 ss. to ʒ ss. of water, injected daily—is said to have been employed with good result.*

Chassaignac's *écraseur* and its modifications, in which iron or copper-wire is substituted for the chain, require more time in their application, and bleeding *does* sometimes follow their use in this operation.† On the other hand, a ligature of silk or gut or hempen thread is always to be readily obtained, its application requires no great amount of anatomical or surgical skill, and the result you will find certain and satisfactory—if you follow the rules I am about to give you.

In the operation which I have now performed for many years, full anæsthesia, preferably by ether, and gentle but forcible stretching of the sphincter so as to secure ready access to the tumors, are essential features. I would not advise you to undertake the opera-

n general sense favorable, are not such as to tempt us to abandon safe and well-known methods without still further trial. He says: "Most of the cases thus operated on suffer a sharp temporary smarting, and a few have a terrible and prolonged agony. The majority are cured, however, without interrupting the patient's business" (*St. Louis Medical and Surgical Journal*, May, 1879, p. 356).

* Dr. Orr, of Cincinnati, and Professor Conner, both report successful cases (*Cincinnati Clinic*, April 3, 1875); and also Dr. G. W. Semple, of Hampton, Virginia (*Virginia Medical Monthly*, November, 1874).

† Nélaton (in a clinical lecture in the *Gazette des Hôpitaux*, No. 23, 1860), praises the *écraseur* for removing internal piles, but adds (what is curious enough from such a source) that it is usually followed by bleeding, so that perchloride of iron is required afterward; and also that, unless applied with precaution, it is liable to cause stricture at the anus, which he has frequently seen follow its use. He says of the ligature (in the same lecture), "It is an excellent operation, by means of which patients may be cured in eight or ten days, without any accident." He puts it on the same line as *écrasement linéaire*, when done properly, but considers it safer as regards hæmorrhage.

tion without them. The complete temporary atony of the sphincter muscle produced by the latter manœuvre secures not only the great advantage to the surgeon of free and ready access to the lower part of the rectum, but it saves pain and trouble to the patient after the operation. The muscle should not recover the full vigor of its contractile power for a week, if the manœuvre has been thoroughly accomplished, and meanwhile the patient is spared much pinching of tender parts. I have thought that retention of urine, which sometimes follows the ordinary operation, has been prevented by it. I am aware that this manœuvre has been characterized by some writers as a violent and an unjustifiable proceeding; but I have employed it in a great many operations and explorations during the last twenty years, and can say truly that I have never seen any permanent injury to the sphincter, nor, indeed, any inconvenience whatever follow its use. On the other hand, it has proved to be a very great advantage for the reasons I have stated, and for uses I will indicate hereafter. I can not help thinking that those who speak unfavorably of this measure may not have fully tried it.

The patient should have thoroughly evacuated the bowel by an enema of tepid water a half-hour before he takes his place upon the couch or table. The latter, which I prefer, should be firm, narrow, of convenient height, and in a good light. As soon as the patient is fully under the influence of the anæsthetic, I have him placed in Sims's position for operation on the uterus and vagina—that is, with the upper part of the body prone, the hips elevated, and the thighs flexed on the abdomen. There should be an assistant

to take entire charge of the administration of the anæsthetic, and at least one more to aid the operator.

I then commence the operation by thorough dilatation of the sphincter-ani muscle, by which the interior of the lower part of the rectum is placed entirely at my disposition, and then proceed to the ligature of the hæmorrhoidal tumors in the following manner: Transfixing the largest of them with a tenaculum, I cut through the integument at its base with scissors, around its external half, and as much more as seems desirable at the moment, and pass the tenaculum to an assistant with a request to draw gently upon it. I then pass a stout surgeon's needle, armed with a double ligature, from without inward, deeply through the base of the tumor, and, drawing it out through the mucous membrane within, cut loose the needle, and tie tightly so as to strangulate the included tissues thoroughly on either side, leaving for the present the ends of the ligatures uncut. This procedure is repeated upon each of the remaining tumors, of which there are rarely more than four or five, sometimes only one or two. With the tenaculum and curved scissors the strangulated tumors are then cut away to within a safe distance of the ligatures—the ends of which, having been meanwhile useful in drawing apart the sides of the dilated opening so as to facilitate thorough inspection, are now cut short. An anodyne is then given—subcutaneously, or as a suppository placed in the bowel—the parts washed, and the patient placed in bed with a folded sheet beneath the buttocks.

This is the operation; now for the details. The division of the semi-mucous integument around the outer half of the base of the tumor is a partial adop-

tion of the suggestion of the late Mr. Salmon, of St. Mark's Hospital, London, who, followed in his practice by Mr. Allingham, cut completely around the base of the pile, leaving but little to be embraced by the ligatures except its blood-vessels. Accepting this idea, I prefer to snip the "semi-mucous" outside membrane, the strangulation of which causes most of the after pain, and to leave the rest. The mucous membrane within is effectually cut through by the ligature, and its dissection is liable to cause unnecessary delay, and possibly to mask the parts with blood. When the mass is large or solid, I cut all around its base. Cutting away the bulk of the tumors after tying them enables you to prove that the strangulation has been complete, and it leaves less slough to cause odor.

The delicate semi-mucous membrane of that portion of the rectum habitually grasped by the sphincter is far more sensitive to violence than the gut within; and, when included in a ligature, it is painfully pinched by the irritated muscle, becomes cedematous, and rolls out at the anus, giving the patient the unpleasant idea that his piles have come down again. Moreover, like one of the varieties of external hæmorrhoid, this sort of swelling is very slow to disappear, and then leaves behind it a tab of loose skin.

In the majority of cases requiring this operation, your patient will claim the benefit of anæsthesia; or, if of the other sex, it will become you to recommend it, so as to spare her modesty, as well as to prevent possible pain. The instances will be rare in which you will be compelled to forego this great advantage, but in such a case you will be obliged to vary your mode of procedure by resorting to the old method of

operating, somewhat in this way: The patient being in good condition for operation, with bowels acting regularly and well, let him delay his daily stool until your visit, and present himself to you immediately afterward, with his piles thoroughly protruded; let him stand, bending forward over a bed or chair, with the parts exposed to a good light; then, with an assistant to draw apart the buttocks, proceed to pass the double ligatures through the bases of the tumors, as before, but do not begin to tie until all the tumors are thus secured; for it will be necessary to keep the tumors in view by drawing on the ligatures—their extremities being knotted to prevent their slipping out, and placed in the hands of assistants for this purpose—otherwise the involuntary contractions of the *levator-es-ani* muscles will inevitably retract them within the sphincter. Then, drawing down each tumor in turn by means of its ligatures, cut around its base and tie, as before, cut off the ends of the ligatures and the bulk of the strangulated tumors, and return everything within the bowel, not forgetting an anodyne suppository. If your patient can not get his bowels to act at the time of your visit, or if the tumors do not come down satisfactorily, let him have an enema of tepid water, and try again. If they tend to retract during the operation, let him sit over warm water and strain; and it is well to have a curved spatula or Sims's speculum at hand. Without personal experience in both of these methods of operating for internal piles, no one can adequately appreciate the difference in favor of that in which both anæsthesia and preliminary dilatation of the sphincter are employed. When it is decided to substitute the ac-

tual cautery for the ligature, after transfixing the tumor with the tenaculum, and drawing it gently away from its attachment, one of the clamps devised for this purpose is to be applied at its base, including in the grasp of the instrument a small portion of the healthy mucous membrane. The pile thus strangulated is then cut off at a scant quarter of an inch from the surface of the clamp, and the stump converted promptly into an eschar by means of the thermo-cautery at a dull-red heat, or, in its absence, the ordinary button-headed cautery. The clamp is then removed, and the process repeated upon the remaining tumors. Any bleeding point is then touched again by the cautery, the parts anointed with vaseline, and returned. The dangers to be kept in view, in this mode of operating, would seem to be subsequent bleeding, and possible stricture from too free use of the cautery; but both are of rare occurrence.*

As to the after-treatment, a little morphine is advisable, to delay the action of the bowels, if not

* Mr. Pollock, of St. George's Hospital, London, has advocated a new method of operating for internal piles, in the *Lancet* of July 3, 1880. To avoid the severe pain which, in his experience, often follows the operation by ligature, as well as by the clamp and cautery, he adopts the plan of crushing each tumor by means of a powerful forceps, constructed for the purpose, so as to sever it entirely when applied with full force. He bases this practice upon the fact of the absence of pain after sudden and severe crushing, where the life of a part is completely extinguished. The experience of this eminent surgeon of the method just described, which he has been testing for several years, is favorable. He has found it necessary, however, to apply the ligature not unfrequently to bleeding points after crushing off tumors in this manner; so that a source of irritation is thus liable to be left in the neighborhood of the sphincter capable of exciting its powerful contractions. These involuntary spasmodic contractions of the sphincter are the main source of the pain which attends all operations at the anus, where the muscle retains its integrity; and I have found so much relief by temporarily paralyzing this muscle by forcible stretching, as the first step in the operation for ligature, as to justify reliance upon this manœuvre to prevent after pain.

necessary to relieve pain. I generally introduce a suppository, containing half a grain, into the rectum before concluding the operation; and often this is all that is required. The patient should remain in bed, and use a light diet of bread and milk, with beef-tea, or *consommé*. The first passage from the bowels—and this should be delayed for three, four, or even five days, if there is no uneasiness from flatus or other source—is to be effected by the aid of a moderate dose of castor-oil; and it is well to assist its action at the proper moment by an enema of warm flaxseed-tea. The introduction of the tube of the injection apparatus does not cause the pain usually anticipated; and, if a little warm sweet-oil should be added to the injection just before the withdrawal of the tube, the passage which follows is often entirely painless. Repetition of the stool within a day or two should be prevented, by paregoric, if necessary; and the enema should precede each motion for the fortnight following the operation, with the additional use of a small quantity of some mild laxative preparation containing sulphur, if required, to keep the fecal dejections soft in consistence. The ligatures require no looking after; they take care of themselves, coming away spontaneously; and the healthy ulcers, which they leave in falling, heal without trouble, if the precautions I have first detailed are observed. I have known a hard stool, voided by effort, to be followed by some bleeding, a week after the ligatures had come away; the hæmorrhage, in this case, comes from the congested granulating surface of the unhealed ulcer, and the patient is usually alarmed, through apprehension that his malady has not been cured. But the bowel never comes down after the

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operation by ligature; the hæmorrhoidal tumors can never be again protruded; of this the patient can be assured. During the second week the convalescent is usually able to resume his occupations; and, with reasonable care, the cure is found to be permanent.

There is no operation of surgery which, in its ultimate results, gives more satisfaction than that which I have just described to you for the radical cure of internal hæmorrhoids. The numerous symptoms resulting from hæmorrhage and its consequences, in the way of depression and disturbance of the nerve-force, bring the sufferer great comfort by their disappearance, and he is surprised when he realizes the full amount of the damaging influence of the disease from which he has been relieved by the operation.

As to the question of danger of the operation by ligature: in selected cases, it is so trifling as to be hardly appreciable. I have never had an unpleasant result. In over one hundred cases of operation by ligature, the late Valentine Mott had one fatal result—in a gentleman “who had just before met with great reverses in business.” From the symptoms, as recounted, I infer that the cause of death, in this case, was pyæmia, as he “fell into a typhoid condition” shortly after the operation, and “small abscesses were found in the liver after death.” I have knowledge of one other case where a similar result followed a partial operation; the patient, a medical man, having subjected himself to exposure and over-fatigue within a day or two afterward. He also died of pyæmia.

There is a popular impression that the bleeding from internal hæmorrhoids—which, in many cases, assumes an irregular periodical character, recalling

VASSELIER

the catamenial flow—is salutary; or, at least, that it seems a protection from more serious disease, as a sort of safety-valve to the system. I am confident that there is no truth in this idea; at all events, I have arrested the flow in a great many instances, and I have seen none but good results from the interference. The anæmic head-symptoms, such as ringing in the ears and the like, often supposed to indicate a “tendency to apoplexy,” have always promptly disappeared, together with other alarming sensations due to impoverished blood.

As a rule, bleeding piles rarely relapse after an operation which has been judiciously and thoroughly performed; yet I have met with two cases, both females, in one of whom bleeding returned, but not the prolapse, while in the other there were both bleeding and protrusion to such an extent that I was compelled to repeat the operation. Both of these ladies were near the critical period of life, and this circumstance seemed to me to influence the persistent tendency to congestion and hæmorrhage from the vessels of the rectum. In the former, the hæmorrhage was periodical, but not regularly so; and the symptom of *digiti semi-mortui* was present. At the end of some three years, the tendency to bleed disappeared with the menses, and she has since enjoyed good health. In the other case, hæmorrhage returned some months after the second operation, but in a less degree. This lady showed evidences of venous dilatation in other regions of the body, and she belonged to a family who might be said to present a varicose diathesis. After the change of life, her bleedings, which had been irregularly paroxysmal, gradually

disappeared, and she has remained well. There exists, no doubt, in some cases, a general varicose dilatation of the capillaries and smaller venous radicals, as well as of the larger hæmorrhoidal veins, and this condition favors a tendency to hæmorrhage, especially in women; and it also begets an impaired condition, as to quality, of the tissues which they imperfectly drain. I encountered an example of this impairment of nutrition in a case upon which I recently operated for eroded and ulcerated internal piles, complicated with fissure. The lady had been suffering for many years from loss of blood from the rectum, and presented a very anæmic appearance. Latterly, the pain in defecation had become so excessive that she was obliged to apply for relief. I employed forcible dilatation to facilitate exploration, as well as to accomplish the cure of the fissure, and, although I used no more than the usual amount of force, both the integument and the sphincter muscle gave way as though they were rotten, and some laceration occurred. The venous bleeding that followed was so free that I passed a good-sized sponge, armed with a stout double ligature, up the rectum, and an assistant made compression by drawing upon the ligatures, while I completed the operation upon the hæmorrhoidal tumors. The subsequent application of persulphate of iron arrested the bleeding, so that I removed the sponge before the patient recovered from her anæsthesia, and she recovered very rapidly and very perfectly both from the operation and her painful maladies.

In cases where this tendency to persistent hæmorrhage from the rectum has existed, I have found benefit from iron, iron and manganese in combination,

gallic acid, injections of cold water—both before and after movement of the bowels—and ice in the rectum; and also from the water of the Oak Orchard mineral spring, which contains free sulphuric acid, and the water from the Rockbridge alum spring, of Virginia. I have also advised that the patient should always use a bed-pan, and have the bowels act while in the horizontal position; and this precaution has seemed to diminish the loss of blood.

In operating upon internal hæmorrhoids of long standing, I have encountered, in several instances, tumors which had become dense and fibrous in their consistence, with more or less tendency to the formation of a pedicle—a change which I ascribe to the induration following repeated attacks of inflammation. In one case the hardness was so considerable as to awaken a suspicion of cancer, which, however, proved to be unfounded, as the lady recovered entirely.

LECTURE III.

PROLAPSUS ANI.

Prolapsus ani—"prolapse," "falling," or "descent" of the lower bowel—are the names given to a disease of quite common occurrence, and sometimes of much gravity. It is also spoken of as *procidencia recti*; and, in dispensary practice, a mother will often present her child with the complaint that "its body comes down." I have already spoken of one variety of this ailment, in which the mucous membrane of the lower rectum, dragged down by internal hæmorrhoidal tumors which have grown upon it, protrudes from the anus like the lining of a coat-sleeve projecting beyond its cuff.

From the different names applied to *prolapsus ani*—the title under which the disease is most frequently treated of in text-books of surgery—you will infer, and correctly, that it presents itself in several varieties; and there is also, in truth, as much vagueness in the knowledge of this malady in its various forms as in the terms applied to it. As it is a source of great physical suffering, not rarely of fatal consequences and complications, and attended, in some of its forms, by great difficulty in diagnosis, we shall examine somewhat closely into its causes and nature.

In all cases of prolapse there is a protrusion through

the ring of the anus, from within, of a soft scarlet or livid mass, covered externally by the mucous membrane of the intestine, and smeared with the tenacious mucus peculiar to the part, discolored by fecal matter, and sometimes streaked with blood. In a certain proportion of these cases, the protrusion consists of the mucous membrane, and nothing more; but in others it may include, also, the muscular coat of the bowel, its serous coat, and even other viscera.

Although similar in their clinical aspect, these protrusions may, therefore, present vitally important differences in their nature, and we must learn how to distinguish them. They are something more than a mere "falling down," or slipping out, of the bowel through the ring of the sphincter, as the title would imply, being veritable extrusions effected by force from within; and this force is, mainly, an exaggeration of the extrusive function of the intestine, aided by the action of the abdominal muscles and by gravity.

You will probably meet with this disease more frequently in children, in whom the undeveloped *os sacrum* presents less of a concavity than in the adult for the support of the lower bowel, and who are liable to violent and uncontrollable fits of straining from slight causes. In the adult it is often a complication of advanced stricture of the urethra, the act of straining to make water favoring the descent of the bowel; and it frequently accompanies stone in the bladder at all periods of life. In the old man, it is favored by the presence of an enlarged prostate, the bulging of which into the bowel deceives him into frequent efforts at stool; and here, also, the increasing laxity of parts pro-

motes the descent. In children of weak mind and in lunatics, prolapse is especially liable to attain large proportions.

Like *hernia* and *procidencia uteri*, the protrusion of the lower bowel tends continually, if unrelieved, to increase in volume; and sometimes, when of long standing, it reaches an enormous size.*

It is, therefore, a malady which it is desirable to check in its earliest stages. An old stricture patient in the adjoining hospital had a prolapse which measured seven inches in length, and four and a half inches in diameter at the anus—the orifice of which was proportionately distended. It came down in full volume whenever he strained in the attitude of squatting; in urinating in the upright position, however, by keeping his thighs approximated closely, and his perineal muscles contracted by special effort of the will, he could prevent any protrusion, his stricture having been measurably relieved. His sphincter ani was unreliable from frequent over-distention; it was in a state of permanent gaping and dilatation from atony, and also diminished in volume by atrophy. This enormous tumor was conical in shape, with its base at the anus, and presenting at its apex an opening through which the finger passed readily its whole length; and when grasped between it and the thumb,

* Bryant speaks of a "foot of entire bowel" (*Manual*, etc., Philadelphia, 1879), and Fabricius ab Aquapendente describes a falling of the bowel as long as the fore-arm, and double its volume (Cruveilhier, *Traité d'Anatomie Pathologique Générale*, Paris, 1849, vol. i, p. 550). Nélaton mentions a case in which twenty-one and a half inches of gut protruded. Professor D. H. Agnew attended a lady of ninety-seven, with fracture of the thigh, in whom an enormous protrusion took place. It was a complete invagination of the entire *rectum* and a portion of the colon, and measured at least twelve inches in length (*Princ. and Prac. of Surgery*, Philadelphia, 1878, vol. i, p. 422).

the impression was clear upon the mind that all the coats of the rectum were present in the tumor—the fibrous and muscular coats, as well as mucous membrane—and that the tumor, as was evident also from its measurement, comprised not only the whole length of the rectum, but in addition several inches of the colon. In the dissection of a similar tumor, Mr. Quekett, of London, found not only all of the proper coats of the lower rectum, but also a good deal of peritonæum. This, then, is the distinguishing characteristic of true prolapsus of the rectum: that it is liable to involve the whole thickness of the walls of the gut, and is not confined to mucous membrane alone, dragged away from the muscular coat through yielding of the lax connective tissue between them, as in the slighter degree of prolapse already described as liable to complicate internal hæmorrhoids.



FIG. 3.—Partial Prolapse, consisting of Mucous Membrane alone. (Bryant.)

In Fig. 3, the simple prolapse of mucous membrane is represented. It is a circular or oval reddish mass, like a rosette, with an irregularly wrinkled or

puckered surface, and its wrinkles or folds *radiate*, in a general way, from the center of the anus.

In Fig. 4, the whole rectum, together with a portion of the sigmoid flexure of the colon, has been



FIG. 4.—Complete Prolapse, comprising all the Coats of the Gut.

doubled upon itself and forced through the anus. The tumor is bulky, solid, and distinctly conical in shape, and its folds are deeper and *uniformly transverse*.

American systematic writers designate the form of protrusion represented in Fig. 3 as "partial," and that shown in Fig. 4 as "complete" prolapse. These terms certainly facilitate description, and I gladly adopt them.* The latest French authorities

* Many writers use the term "procidentia"—borrowed from uterine nomenclature—and some confine it to the larger and more complete rectal protrusions, reserving the term "prolapse" for the smaller; but there is a want of precision in these terms that can not be charged against "partial" and "complete," as here defined.

recognize two varieties of the disease: *prolapse of the mucous membrane alone* and *prolapse with invagination*, the latter containing all the coats of the gut, a division which covers the same ground. English writers do not generally recognize this distinction, or at least do not define it clearly, and there is, therefore, not a little confusion in their description of this malady; in fact, there are few subjects more obscurely treated by most of the older authors, and concerning

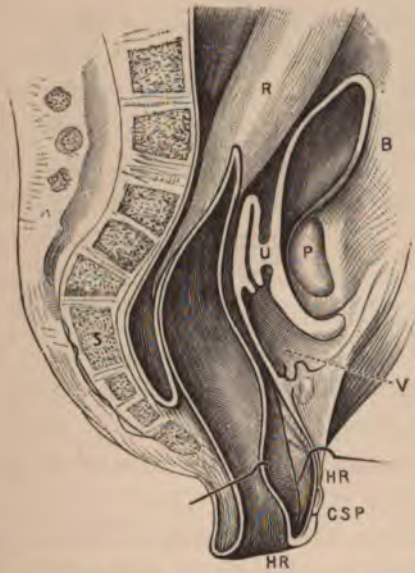


FIG. 5.—Complete Prolapse, with a Peritoneal Pouch, as shown in a Dissection of a Child. R, rectum; B, bladder; S, sacrum; P, pubes; U, uterus; V, vagina; H R, H R, the prolapse; C S P, the cavity of the peritoneal sac (displayed by hooks). (Cruveilhier.)

which you will meet with less full and precise information in your text-books. This is my apology for bringing before you certain details which are required for a more thorough knowledge of the subject; for it

is no easy task to distinguish a simple protrusion of the mucous membrane from a falling of the whole bowel, no matter what you may hear to the contrary. Concerning the last-mentioned form of protrusion, the "complete," I am especially anxious to impress you with the fact that there is always more or less of the peritoneal sac carried down with the bowel, and necessarily present in the tumor. I have reliable information of a case in which the removal of a "complete" prolapse of long standing, in a child, was quite recently undertaken by a hospital surgeon of mature years. The protest of a junior colleague led the operator to pass some deep sutures, in deference to a fear expressed as to the probability of intestinal protrusion, but he was confident that the tumor consisted of mucous membrane alone, and proceeded to remove it. Notwithstanding the deep sutures, protrusion of several coils of small intestine did occur, and the child died, in collapse, within twenty-four hours. Criticism of such an operation as this could be met by citation of high authorities who have sanctioned it. But I trust it is not too much to say that this sanction has been based, certainly in avowed instances, upon a misconception which pathological anatomy offers us the means of removing, and that the whole subject should be reconsidered.*

* Boyer, who, up to the publication of Nélaton's *Surgery*, was the great French surgical authority, fell into the strange error of denying that it is possible that the whole rectum can be displaced from its connections and forced out through the anus—as in what we call the "complete" form of prolapse. He insists that all anal protrusions consist of mucous membrane alone, and that the external connections and attachments of the rectum render its extrusion in totality an impossibility; and he considers that this is proved by the recorded cases in which recovery has followed the sloughing of such tumors, and even their removal by the ligature or knife (*Traité des Maladies Chi-*

Partial prolapse, i. e., of mucous membrane alone, never attains a large size. A certain amount of protrusion of the inner coat of the bowel always takes place during defecation, normally, similar to what occurs in the horse, and "partial" prolapse is simply an exaggeration and persistence of this normal protrusion. It is to be recognized by its comparatively moderate size, and its radiating folds. The tendency of this form of prolapse is to go up again into the bowel spontaneously; if it remain down and is strangulated by the external sphincter, it may assume a congested or livid appearance, and become more or less infiltrated by œdema. If partial prolapse becomes chronic, i. e., if it comes down at every stool and afterward returns spontaneously, or is put back, its tendency is, as I have already said, to grow larger;

rurg., fourth edition, Paris, 1831, vol. x, p. 89). Boyer quotes, in confirmation of his belief, a case, recorded by the celebrated obstetrician Levret, of a woman with a livid, sanguinolent protrusion from the anus, of the size of a fist, in whom, when he introduced a finger into the vagina, he found that both this canal and the uterus were in their natural situation, which, he, Levret, wrongly asserts, could not possibly have been the case if the whole thickness of the rectum had escaped through the anus. Their countryman, Cruveilhier, one of the highest authorities in pathological anatomy, some years afterward fully exposed this singular error by dissection of the parts in the dead body of a patient with complete prolapse. His able exposition of this subject in his *Anat. Path. Générale* (Paris, 1849, vol. i, p. 547) is still regarded as the best authority, and I regret that this work has never been translated into English. In the twenty-first *livraison* of his illustrations of pathological anatomy, Cruveilhier gives a plate of the vertical section of the pelvis of a female child between six and seven years old (Fig. 5), with a falling of the rectum of a moderate size, but containing all the coats of the bowel, in which the anterior reflexion of the peritonæum reaches the most depending point of the protrusion, the uterus and vagina retaining their normal position in the pelvis. He adds that this is *probably always the case* in falling of the rectum; and that "the connections between the gut and the vagina, in the female, and the bladder, in the male, always yield." An inspection of this plate will render it perfectly clear why the intestines are liable to protrude when a "complete" prolapse is removed by the knife.

but the increase of size is explained by the fact that the muscular coat of the bowel is now also being dragged down, and, when this occurs, the deeper transverse folds, due to contraction of the longitudinal muscular fiber of the bowel, will make their appearance upon the surface of the tumor and mark the change in its character.

Clinically, partial prolapse, *in the adult*, is almost always caused, and of course complicated, by internal hæmorrhoidal tumors; and I have described this very common condition when speaking of the last-named affection.

When uncomplicated (and it is encountered in this form most frequently in children), partial prolapse is the result of straining provoked by dysentery, teething, ascarides, or, in rarer cases, by the presence of a rectal polypus. The habit of leaving a child sitting for a long time upon a chamber vessel promotes it. When neglected, it results inevitably in dragging down of the remaining coats of the bowel, and this condition we will next consider.

Of *complete prolapse*, in which the whole thickness of the bowel is included, there are three distinct varieties, each of which the well-informed surgeon should be able to distinguish:

First. The most common form, in which the greased finger, passed carefully around the base of the tumor, recognizes that its external surface is absolutely continuous with the membrane that lines the orifice of the anus, without the existence of a sulcus. Here the bowel began to slip out, originally, by its very lowermost portion, and this has gradually formed the outer layer of the protrusion, the gut, as it is forced

down from above, passing within it. This form of complete prolapse follows simple protrusion of the mucous membrane, or partial prolapse, when the latter has been neglected; it results from a persistence of the causes which are keeping up the latter and effecting its gradual increase by dragging upon the outer coats of the gut, when the sub-mucous connective tissue will no longer yield. Such a tumor always contains more or less peritonæum, and it is important that you should never lose sight of this fact. The peritonæum, you will remember, surrounds the rectum on all sides, and extends downward to an oblique line three and a half inches from the anus in front, and scarcely five behind. The peritoneal reflexion at the base of a protrusion of this kind is, therefore, always larger in front. Esmarch says that, when prolapse is extensive, a pouch of peritonæum is formed by the anterior wall, in which a coil of small intestine or the bladder or even the ovary may be lodged.

Second. Where the finger can be inserted into a groove alongside of the base of the tumor, so as to recognize a distinct *sulcus* of more or less depth, at the bottom of which, if not too deep, the lining membrane of the gut can be felt as it is reflected from the base of the protruding tumor. In this case, the rectum has begun to fold upon itself (in other words, to become *invaginated*, or, in the language of the day, "telescoped," the upper part of the bowel always passing *within* the lower) at a point more or less distant from the anus, yet generally within the reach of the finger.

Third. In this variety the finger can be inserted through the anus alongside of the protruding tumor,

but can not reach any line of reflexion of the mucous membrane of the rectum upon the tumor; the latter, in fact, may not even as yet have protruded externally through the anus, but may be felt only as a sort of polypoid mass occupying the cavity of the rectum. Here *invagination* has taken place higher up in the colon, has possibly commenced in the cæcum or even in the lower part of the ileum, which, sucked in through the ileo-cæcal valve, has been carried with the cæcum itself up the ascending colon, and, the connecting attachments gradually yielding, the invaginated mass has been propelled along the whole length of the colon, and finally presents itself in the rectum, or may be possibly protruded externally. This almost incredible displacement of parts has now been certainly recognized in so many recorded cases ex-



FIG. 6.—A, rectum laid open; B, natural opening of intussuscepted ileum; C, colon; D, ileum, upper portion; E, invaginated ileum. (Bryant.)

amined after death, that it would be inexcusable to fail to recognize it during life. Fig. 6 represents the invagination, and the mass occupying the rectum, as found in the dead body.

It is obvious that these three varieties of complete prolapse are simply examples of the same affection,

differing only in degree, and that the essential cause of the affection is the tendency—which may develop itself in any part of the intestinal canal—of the bowel to become inverted, “invaginated,” or “telescoped” into itself. This remark does not apply, strictly, to the first variety of complete prolapse, in which the lowermost part of the rectum slips out through the anus in the beginning, and the rest is forced to follow it; but here, also, as in the other varieties, the mechanism is identical, for it is the vermicular contraction of the muscular coat of the intestines which mainly produces the displacement in all invaginations.

Complete prolapse is evidently a more serious affection than the *partial* form of the disease; and the last of the three varieties described, inasmuch as it involves chronic and generally extensive invagination, is, sooner or later, almost of necessity fatal. There is no recorded instance in which the invagination, after it has reached the rectum, has been permanently drawn out and reduced, except by the intervention of art; there are cases in which it has become hopelessly strangulated and has sloughed, portions of the intestinal tube having been voided *per anum*, with apparent temporary recovery; and there is at least one instance in which such a rectal protrusion was removed by ligature, under the idea that it was a polypus, and recovery is said to have followed.*

* The elder Monro, in 1755 (*Edinburgh Med. and Phys. Essays*, vol. ii, p. 386), describes very clearly and ably a case of prolapse in a healthy boy of eighteen months, protruding four inches from the anus, which he and Mr. Drummond, the surgeon in charge, failed to reduce. It could be readily forced back into the rectum, and forced up as far as a long finger could reach, but persistently re-descended. An orifice at the lowermost extremity of the protruded gut, into which the tip of the finger could be inserted, and which, Monro says, resembled “the feel of the *os tincæ* of an impregnated womb,”

You will be gratified to learn that this, the gravest form of prolapse—which, in fact, is not generally included in the category of rectal diseases, being treated

clearly proved that the gut was “inverted.” The child died in a few days, and it was found, on opening the body, that the “inversion began a little below the upper part of the sigmoid flexure of the colon, and that the meso-colon was torn away from the inverted part.” In the same paper Monro gives four cases of death from intussusception, in which the bodies were opened; two women, of middle age, and two children, of seven and twelve. These cases had lasted from six months to two years before causing death. One of them was in the arch of the colon, seven inches long; another, in the sigmoid flexure, four inches long; and, in a third, the ileum “was raised twelve inches within the colon, and also the valve, the appendix, and the caput coli.” In the fourth case, reported to him by Cullen, the boy (twelve years old) voided, *per anum*, a portion of ileum thirteen inches long, nearly a year after his symptoms began, and survived the separation six weeks, during which he voided potato skins which had been recently eaten, showing that the continuity of the intestine had been reestablished. Monro remarks, “’Tis surprising that the people in the preceding histories lived so long.” But this is explained by another remark: “There was a narrow passage for the fæces found in all of them”; that is, complete strangulation and consequent obstruction had not taken place in any of them.

Mr. Hutchinson, of the London Hospital, has published (*Med.-Chirurg. Trans.*, vol. lix, page 31, 1873), in connection with the case of a child with an apparently strangulated prolapse from invagination, on which he had operated successfully by opening the abdomen, a table of one hundred and thirty-one cases, which he had caused to be collected from all sources, in which the invaginated mass of bowel had reached the rectum, and could be seen protruding externally, or felt by inspection or exploration of the lower bowel; and in about twenty per cent. of these cases the invaginated mass protruded from the anus as a prolapse, as in his case. This gives an idea of the frequency of the third variety of complete prolapse.

As evidence of its great mortality, we find in this table no other case, besides his own, saved by surgical art. In a small proportion of the cases, the invaginated mass, becoming strangulated sooner or later, fell into gangrene, and separated by sloughing, as in the boy whose case was reported by Cullen to Monro. An instance is reported by Dr. Daniel Choate, of Merrickville, Canada (*Amer. Jour. Med. Sci.*, April, 1841, page 533), of sloughing of an invaginated portion of colon, including the caput coli and appendix, ten inches long, during an attack of so-called dysentery. He found the patient—an Irish laborer who lived eighteen miles away, in the woods—with a falling of the bowel of the size of his fist, and, after reducing this, his attention was directed by the man’s wife to “something” he had passed from the bowels shortly before, which she had preserved in a basin of water, and which proved, on examination, to be the portion of colon above described. The man “got well.” A mass voided at

of under the head of invaginations—has been recently proved to be curable by a surgical operation, heretofore regarded as unjustifiable. I will return to this subject shortly.

stool by a woman, after an attack of "bowel complaint," which she survived, was sent to me in 1857 by the late Dr. Wales, of Rondout, N. Y. It proved to be small intestine, and measured no less than five feet; it was ileum, for the *glandulæ agminatæ* were distinctly recognized by Dr. Isaacs.

It is especially noticeable that, in these cases of prolapse with invagination, so large a proportion of them have begun by sucking in of the lower end of the ileum through the ileo-cæcal valve, and the subsequent inversion of the cæcum itself into the ascending colon, and thence onward to the rectum, and many of them to actual prolapse. This was the case in the child saved by Hutchinson, in whom the protrusion from the anus is thus described: it "was about two inches long, deeply congested, and much swollen. By the side of it the finger could be passed its full length into the rectum without reaching the point at which the intussusception began." *He was able, on carefully examining the extremity of the protruded part, "to identify the pouch and valve of the cæcum, with the opening into the ileum."* As illustrating the length of time during which invagination may exist before fatal strangulation or obstruction comes on, I will mention a case, reported by Dr. Worthington (*Am. Jour. Med. Sci.*, January, 1849, page 97), of a child, three years old and some months, who died, apparently of diarrhœa, with protrusion of the bowel at the anus, after an acute illness of six weeks, in whom intestinal symptoms had existed for two years. On *post-mortem* examination, the intussusception was found to involve the lower end of the ileum, with the cæcum. This form of intussusception may be present and progressing, in the absence apparently of serious symptoms, as in the case of Mr. Sidney Jones (*Trans. Path. Soc., Lond.*), in which a child under two years of age lived nine weeks after an invagination which had traveled through the entire length of the colon (evidently also ileo-cæcal), and protruded six inches from the anus. After the first severe symptoms, the child had free action of the bowels, took the breast well, and ceased to vomit. Death was finally caused by exhaustion from straining, and by the slowly progressing gangrene of the extruded portion. It is worthy of notice that, in this case, the serous surfaces of the invaginated bowel were firmly adherent. Absence of peritonitis and of adhesions in these cases would seem to be the rule, and yet, in neglected cases, peritonitis may be a cause of the fatal termination, as in the interesting example related by Dr. Hilton Fagge in his excellent paper on intestinal obstruction (*Guy's Hospital Rep.*, vol. xiv, 1869, p. 272). A woman of thirty-five, with a complete prolapse protruding several inches, which she had concealed for a long time, had, finally, symptoms of strangulation, and entered Guy's Hospital under Mr. Cock. The prolapse could be reduced, but this did not overcome the strangulation. She refused to submit to any operation, and died of acute peritonitis. Dr. Wilks found, on examining the body, an intussus-

Diagnosis.—The clinical features of *complete* prolapse need not detain us, for I have already touched upon them sufficiently; but I must ask you (in view of the great importance of correct diagnosis, as bearing

ception in which it was calculated that the commencement of the entering layer was eighteen inches from the anus. The prolapsed mass, four and a half inches long, was sloughing; it was curved on itself by the dragging of the attachment of the meso-colon, so that the opening into it (Monro's *ostinca*) was at some distance from its extremity. The foregoing examples will serve to show some of the different phases of prolapse with invagination, and its relations with the general category of intussusceptions. The case in which a mass of this nature was removed by ligature is recorded in the *Boston Medical and Surgical Journal*, of July 6, 1876, in a letter from Florence, Italy, from Dr. Wilson: "N. N., native of Corsica, aged sixteen, emaciated, color of a dirty yellow, suggestive of malignant disease; has generally been healthy, and never suffered from any serious abdominal affection; no history of cancer in the family; has been ill a twelvemonth with constipation and painful defecation. Gradually he became conscious of some mechanical obstruction just within the anus, and then of a protrusion, which sometimes he could put back in place himself, and at other times would have to seek aid. Purgatives, taken to relieve constipation, produced discharges of scybala, blood, and mucus, followed by the appearance of the tumor after considerable straining; occasionally there was also discharge of a sero-mucous fluid. The more general opinion among his medical advisers was that the tumor was cancerous. The pain attending defecation had become so severe that he declined taking food. An operation was proposed, but objected to, and he determined to proceed to Florence for further advice.

"On the first examination, a tumor was discovered blocking up the rectum, which the patient could generally protrude, but which he failed to do on the present occasion. A dose of castor-oil was given, which effected this object; it was then discovered to be movable, showing that it was unconnected with the deeper structures of the rectum. The finger could pass freely round its circumference, where there was space for the escape of the feces. The surface of the tumor was irregular, from the presence of vegetations, and no aperture of any kind was detected; it was considered to be a cancrroid, and later a polypus. During a subsequent examination, a portion was detached from the surface, and, on submitting it to the microscope, it was ascertained or rather held to be a papilloma, but the surgeon was unconvinced, and adhered to his first impression that it was a polypus. The general appearance of the patient was anæmic, from loss of blood, suffering, and defective nourishment. After sundry consultations, an operation was proposed as the only chance of salvation, and agreed to by the sufferer. A full dose of castor-oil was administered, which produced a copious discharge of fecal matter and complete protrusion of the tumor. The patient was placed on an operating-table. On applying a wire

upon selection of methods of cure) to keep *its three varieties* distinctly in view, namely, the first and most common, where there is no sulcus at its base, but pretty certainly a pouch of peritonæum within its

ligature to prevent hæmorrhage, it was found that the point of origin of the polypus could not be reached, as the peduncle was evidently a long one. It was, however, applied as high up as practicable. The extreme ends of the metallic ligature were securely fixed to the handles of the instrument; the tumor was drawn down, and excised by the galvano-caustic wire at a short distance from the point of ligature. This apparently simple operation was followed by unusual results, namely, shock, with its concomitant symptoms. The patient was hurried to bed, and the surgeon was surprised to find that his wire ligatures had almost vanished, that the handle of the instrument alone prevented their disappearance into the cavity of the abdomen. The tumor was now examined, and it was soon discovered, to the general astonishment and consternation, that the tumor was *not* a cancrroid, *not* a polypus, *not* a papilloma, but the whole of the ileo-cæcal valve, with a portion of the ileum, in a considerably hypertrophied state, measuring, in its invaginated, telescopic condition, ten centimetres. The wires were now inclosed in glass tubes, and the patient left in repose, with a prognosis which may easily be imagined. After fourteen hours, evidences of strangulation manifested themselves, and it was determined to slacken the ligature, which was followed by a copious discharge of serous fluid and a large quantity of fæcal matter, blood, and mucus. In a few hours there was a subsidence of all untoward symptoms. In a few days the bowels were opened naturally and regularly, which had not occurred for many months, and in a fortnight the patient announced and carried out his intention of returning to his native hills, where he now remains in perfect health."

The last remark probably assumes too much, as patients in whom any portion of the intestinal canal has been lost, as by sloughing, generally linger in poor health and die soon. Recovery, after loss of a considerable portion of intestine, as Dr. Hilton Fagge has shown, is at best but a reprieve, and a restoration of firm health is not to be counted on. The reporter adds that "the preparation may be seen at the pathological museum of the Florence hospital." In 1867, Mr. T. Holmes removed a cylindrical tumor, which proved to be a mass of invaginated intestine, four inches in length, from the rectum of a man of thirty-seven, in St. George's Hospital. The nature of the tumor had been previously diagnosticated, mainly by an opening at its lower end, which could be reached and entered by the tip of the finger. It had existed for some weeks, and had already partially separated by sloughing. The patient did well for a day or two, and was evidently relieved by the operation, but died within a fortnight from pyæmia. (Abscesses were found in the lungs and liver.) A circular patch of ulceration, which nearly encircled the gut, was found in the sigmoid flexure, and this was supposed to have been the mark of its attachment. (*Trans. Path. Soc., Lond.*)

substance; the second, where there is a sulcus, but the finger when inserted can readily touch the bottom of the groove; and third, where the finger can reach no line of reflexion, and the history of the case and palpation of the abdomen may complete a diagnosis of intussusception commencing high up in the canal. When two orifices can be distinguished at the extremity of a protrusion (that of the appendix vermiformis, as seen at C, Fig. 7, situated near the true

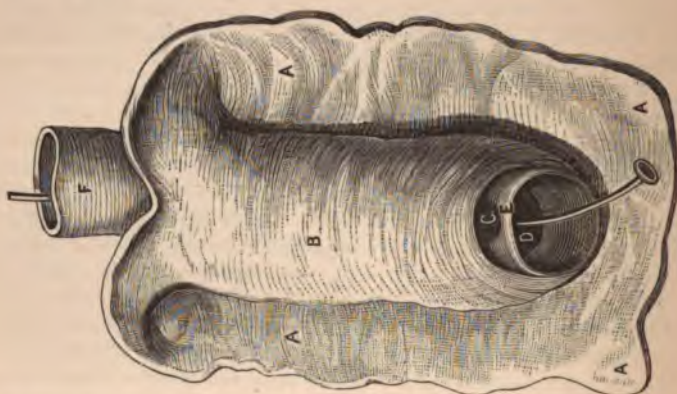


FIG. 7.—A, transverse colon, opened posteriorly; B, the invaginated mass, nearly eight inches long; C, orifice of the appendix vermiformis; D, orifice of the intestine (ileum), where the instrument enters; E, a sickle-shaped, sharp-edged fold—a border of the ileo-cæcal valve; F, section of the ileum, giving exit to the instrument. (Cruveilhier.)

opening of the intestine, but a little on one side, or even the “slit-like opening of the ileo-cæcal valve,” said by Mr. Howard Marsh to have been in sight in a case upon which he operated*), then the diagnosis of intussusception commencing at or near the caput coli is clear. In the case just mentioned, the mass could be felt through the abdominal wall as high as

* *St. Barth. Hosp. Reports*, vol. xii, 1876, p. 95.

the crest of the ileum, on the left side, and in other cases it has been recognized as a solid, sausage-like tumor in the course of the colon.

Its great practical importance justifies also a recapitulation of every point bearing on the diagnosis between "complete" prolapse and the "partial" form of the affection, which involves mucous membrane alone. Where the question arises as to the removal of a prolapse by operation, this distinction (which has hitherto received less attention than it deserves) assumes at once a vital importance; and, in a given tumor, it is often exceedingly difficult to determine, as I have already remarked, whether all the coats of the rectum are present or the mucous membrane alone.

The latter, i. e., "partial" prolapse, is generally assumed to be the more common variety of the affection, evidently, I think, because it occurs in a slight degree so frequently in children, and is so often present in connection with internal hæmorrhoids. In my experience this has not proved to be true. Even in children, when the prolapse is large, or of some duration, it generally contains all the coats of the rectum, and in a large protrusion in an adult I do not think I have seen an exception to this statement.

"Partial" prolapse is never very large, it is generally recent, its feel between the finger and thumb is not fleshy and firm, except when it has remained unreduced and become œdematous from strangulation, and its surface is puckered with creases which, in a general way, radiate from its central opening. On the other hand, where all the coats of the bowel are present in a tumor, it is larger, and of longer dura-

tion;* it is more solid in consistence, assuming a conical shape, and often, when more than three inches in length, it presents a slight curve, resulting from the traction of its meso-colic attachment, which causes a bending to one side, or, in women, to the front, in consequence of the stronger adhesions to the vagina. The orifice at its extremity is more narrow and slit-like, a result also of meso-colic traction, for in "partial" prolapse it is rather circular and patulous. The presence of the muscular coat of the bowel in "complete" prolapse explains, by the contraction of its longitudinal fibers, the deeper transverse parallel folds which mark the surface of the tumor. Finally, there is a not uncommon feature of "complete" prolapse which, when present, constitutes unmistakable evidence of its character, namely, the gurgling of gas in the coils of small intestine present in the anterior peritoneal pouch, which may be felt distinctly in attempting to reduce the protrusion, just as in a large hernia; and from the same cause there is a possibility of sonorous percussion over this part of the base of the tumor, which is said to assume, when coils of intestine are present within it, a more spheroidal shape. Allingham mentions having met with gurgling in no less than seven cases of prolapse, four of which were in women.

Treatment.—We must now proceed to the general subject of treatment, which is to be considered under the two heads of *palliation* and *radical cure*.

* Nevertheless, I have seen the whole bowel shoot out, under strong provocation, at a first effort—just as, in exceptional cases, an inguinal hernia, occurring suddenly, is forced, at the same effort, down into the scrotum—and even strangulated, as in the case of a young man upon whom I operated at the New York Hospital, who had ruptured himself in a violent effort to save himself from choking.

By keeping in mind what I have pointed out concerning the pathological anatomy of prolapse, and the mechanism resulting in its production, which involves the same factors in all its varieties, you can not fail to treat this distressing disease with a good prospect of success. By way of preface, let me remark that in all cases the *cause* of the prolapse is to be made out at once, and as fully as possible, for it may be keeping up the disease by its persistence, and, if removable, a cure may be accomplished without further delay. Thus, the removal of a stone from the bladder may be the remedy required; or some injections of lime-water or infusion of quassia to get rid of ascarides, which are provoking habitual straining; or the detection and tying off of a polypus.*

A prolapse partakes more or less of the nature of a rupture, or hernia, and the surgeon's skill is often first called for to put back a protrusion from the anus which has probably taken place suddenly, in an excitable child, while straining at stool. In such a case the mother or nurse intuitively places the sufferer across her knees, and by judicious manipulation in the way of pressure by the fingers, aided by a greased rag, will gently force back the protrusion until it retires entirely within the sphincter. You can not improve upon this manœuvre, which is the best for the purpose; but, where the protrusion has become strangulated by the excited sphincter, perhaps livid and œdematous, it may fail, and you naturally hesitate to renew the child's suffering without certainty of suc-

* Under this head (polypus) a number of instances are noted in which prolapse was present as a complication of the disease, and its cure was effected by removal of the tumor.

cess. Here your proper course would be to give enough chloroform to relax the sphincter and quiet the involuntary forcing and tenesmus that are often present, and then, by repeating the manœuvre first described, you will probably succeed at the first effort.

I was once called to the assistance of an old gentleman who had a sudden descent of the rectum happen to him while foolishly straining in the water-closet. He had never had any thing of the kind before, and did not know the nature of the accident which had befallen him. I experienced some little difficulty in effecting the reduction of the protruded bowel through the spasmodically contracted sphincter. After he had breathed some ether, I found no further resistance. But after the bowel has been "down" frequently, unless it has undergone a sudden increase of bulk, there is less difficulty in reducing the protrusion than in keeping it up after reduction.*

As in reducing a dislocation or a hernia, when there is difficulty, the use of an anæsthetic is the patient's right as well as the surgeon's duty, for harm

* Hamilton, of Dublin, relates the following graphic case: "About a month ago I was called to see an old man, in the Liberties, said to have been given up by his medical attendant, which I found, on waiting on that gentleman, to be true. I certainly found the old man very ill, in great torture, with a feeble, intermittent pulse, a dry, brown tongue, a large, hard prolapsus which had been down several days, and which was extensively ulcerated; he had also retention of urine. Attempts had been made to reduce the prolapsus, but they had failed; no sooner was it put up than it protruded again immediately. I first drew off the water. I then, after having oiled my fingers, reduced the prolapsus, pushing it up beyond the internal sphincter, but, as soon as the fingers were withdrawn, the whole mass again came out; this happened a second time. I therefore got a moderate-sized tallow candle, cut it in two, rounded the ends, and, after having again reduced the prolapsus, before it came down I introduced the candle. It effectually kept the bowel up, and he ultimately recovered." (*Dublin Hosp. Gaz.*, December 15, 1845, p. 131.)

sometimes follows prolonged bruising of the parts, as in the following case reported by Cruveilhier: An old man entered Hôtel Dieu with an enormous prolapse, which was reduced only after repeated efforts. He shortly afterward had a chill, and died in a few days, with abscesses in the liver, from pyæmia.

Incision of the sphincter to facilitate difficult reduction, although suggested by respectable authorities, will be rendered unnecessary—unless, perhaps, in a case of exceptional difficulty—by anæsthetics. This measure has the great disadvantage of damaging the fibers of a muscle, the healthy contractility of which is the best safeguard against reproduction of the prolapse.*

But it happens, as a rule, that after a prolapse has been reduced it will come down again very readily; sometimes, indeed, on the slightest exertion, and pretty certainly, unless means are employed to prevent it, at the next stool. The most effective resource in the way of palliation of this tendency to re-descent is *pressure* applied locally over the anus. This is best managed by fitting a wad of oakum, or, in its absence, a piece of soft sponge upon the anus as a compress; and, to keep the compress in place, press the buttocks forcibly together, and retain them in position by a sufficiently broad strip of adhesive plaster applied transversely across the nates.† This will effectually keep the tampon in place, and it is the most convenient alternative for the horizontal position,

* Duchaussoy, whose paper on falling of the rectum in children (in *Arch. Gén. de Méd.*, 1853, p. 320) contains the experience of Guersant, at the children's hospital of Paris, and has been much quoted, maintains that relaxation or want of tone in the external sphincter is the principal cause of prolapse.

† Hake, *Lond. Med. Gaz.*, February, 1847, p. 320.

which is equally sure, but not always possible. If the skin is rendered hard by the frequent application of spirits to prevent soreness from traction of the plaster, this device will prove more useful than any of the mechanical contrivances generally recommended. Of these latter, the best has a spindle-shaped hollow compress of caoutchouc tubing to fit over the anus, and this is kept in place by a vertical arm of wire connected with a circular band around the hips. I can not recommend any of them, because the treatment for radical cure—unless the case is a very old and desperate one—is usually so safe and effectual.

Having accomplished immediate palliation by pressure, there are many remedies which are generally considered to hold out a promise of more permanent cure. These measures, it must be said, however, often constitute a sort of routine treatment, more or less approved by medical men, which, although often ineffective, is hopefully persevered in by patients, and in many cases unwisely, through groundless fear of a surgical operation.

Where, in an adult, there is any suspicion of the presence of hæmorrhoidal tumors, or if there is any habitual loss of blood, however slight, it is very injudicious to defer an examination under ether, when you can safely cure the piles, if present, by simple means, and, by the same or similar means, you could also at the same time effectually remedy the prolapse.

With tonics, internally, such as iron and vegetable bitters (especially strychnia, which Nélaton thought had power to tighten the sphincter), or calomel and rhubarb with injections of tincture of ferri chlorid. and infusion of calumba (Brodie's favorite

prescriptions for children), the use of an enema of simple water before every stool, to soften solid fæces and prevent effort in defecation, is undoubtedly a most effectual measure in preventing the descent of the bowel. The injection should be cool, not cold, and, to answer its purpose, it should be moderately copious. After the stool, and after the reduction of the prolapse (if it comes down), a smaller quantity of fluid—say ʒij to ʒiv —may be thrown into the bowel, as cold as can be borne, for the purpose of constringing the overstretched parts and restoring their contractility. This latter injection may consist of simple water, or some unirritating astringent—solution of the sulphate of iron (gr. i–iij to ʒj), or of the sub-sulphate—of infusion of krameria, decoction of white-oak bark, of witch-hazel—root or leaves—or a suppository, as of tannic acid, may be inserted before the compress is reapplied.

When a stool is passed in the horizontal position, a prolapse will very rarely come down; so that, by the aid of a folded diaper or a thin-edged bed-pan beneath the buttocks, and assisting the act by an enema of tepid milk and water, if necessary, for two or three weeks, a cure, in a recent case, and in a child, may be pretty certainly effected. It has been found, also, that a mother can prevent the descent of a prolapse if she drags the anus of the child a little to one side, as the stool is passing, by pulling upon one of the buttocks with the hand.* The same advantage might be attained by applying a strip of fresh sticking-plaster so as to secure the same deviation of the anal orifice from the median line. Similar safety from

* Dr. H. McCormac, in *Dublin Jour. of Med. Sciences*, July, 1843, p. 416.

protrusion may be secured if the patient can be made to defecate in the erect, or nearly erect, attitude.

I was told by a Southern gentleman who brought his daughter to me several years ago, with a large prolapse of some duration, at the age of five, that the child had the disease in her second year, and had been entirely cured by her negro nurse, who forced her to evacuate her bowels always in the *standing* position, placing her in a cold bath immediately after the motion. It had returned, however, the year before his visit, during a severe attack of dysentery, and still persisted. She got entirely and permanently well under the treatment I have recommended, which, in children, I think you will find efficient in all cases but those in which the protrusion is of large size and long standing, or kept up by some cause which has not been removed.*

Where there is no such influence to interfere with a favorable result, even the worst cases of complete prolapse are curable by a surgical operation.

A surgical operation is proper in all cases of prolapse to which palliative treatment is not applicable, and in those which it has failed to cure. The form

* M. Ferrand (*Gaz. Hebdom.*, 2d January, 1880), according to his statement, cured a lady of thirty-five of hæmorrhoidal prolapse of the size of the fist, which kept continually coming down, by subcutaneous injections of ergotin into the ischio-rectal fossa. He threw in about twenty minims of a solution consisting of fifteen parts each of glycerine and water and two parts of alkaline hydrated extract of ergot. Four injections in all were used in the course of a month.

M. Vidal, of the St. Louis Hospital, of Paris (*Le Progrès Médical*), reports that he has cured three cases of prolapsed anus in adults, by injecting fifteen to twenty drops of a solution of one gramme of extract of ergot in five grammes of cherry-laurel water, causing no abscess, and in one of the cases repeating the injection twenty-two times.

Krönlein (*Langenbeck's Klinik*, 1870, p. 26) reports a case of death from subcutaneous injection of a solution of strychnia for the cure of prolapse.

of operation demanded (except where irreducible invagination is present) is a proceeding which I can especially recommend to you on account of its simplicity and success. Its object is two-fold: first, to get up adhesion between the membrane lining the anus and lower portion of the rectum and their underlying muscular layer, and thus to prevent this loosely attached mucous coat from slipping through the anus, for this, in the common form of prolapse, is the first step—the initial lesion; and second, to stimulate the function of the sphincter, and otherwise to narrow the orifice of the anus itself. You recognize, at once, the necessity for attaining this double purpose; the mucous membrane has been dragged away from its attachments, and the laxity and elongation of its underlying connective tissue, which constantly tend to increase, must be corrected; and, moreover, the stretching of the anus by the habitual descent of a prolapse of any size always gives rise to permanent relaxation of the sphincter, and sooner or later to wasting of its muscular substance, which necessarily weakens, and in time destroys, its important function. I have known a timorous patient with prolapse (from piles, be it understood) submit for months to electrical stimulation of that important sentinel, the sphincter ani, in the hope of getting rid of the constantly recurring protrusion, and of escaping an operation; but there was no benefit received from the electricity, and the operation, after all, promptly effected a satisfactory cure.

Any traumatism competent to set up the process of repair, and cause enough plastic exudation into the meshes of the loose submucous tissue of the lower

part of the rectum and anus to glue it fast to the sub-jacent muscular coat and external sphincter, and subsequently, when organized, to hold it there, will cure a prolapse. The result will be to render it impossible for the mucous membrane to leave its attachments and to protrude.*

This is the *modus operandi* of most operations for the cure of prolapse. It is also demonstrated by the effect of the operation for the radical cure of internal hæmorrhoids, a disease which, as you know, is generally accompanied by more or less prolapse. Two or three of the little tumors are surrounded by the ligature or clamped and converted into eschars by the thermo-cautery, and the protrusion, consisting of the remains of the tumors and prolapsed membrane, replaced within the rectum, along with a suppository containing enough opium to keep the bowels, for a few days, at rest. During these three or four days, the exudation, poured out at the points of ligature or cautery, effectually binds them fast to the other coats of the bowel, and, when the first stool takes place,

* Mollière (*Maladies du Rectum, etc., ut supra*) found that, by inserting the nozzle of a blow-pipe through a puncture in the delicate integument of the anus of a young girl, in the dead-house, he was able to distend readily the meshes of the connective tissue beneath it. By continuing to force in air, it traveled upward beneath the mucous membrane of the rectum, which was thus gradually forced out through the anus in the form of an artificial *partial* prolapse. The protrusion of the rectum often observed in the carcasses of dead animals is the result of the same mechanism—the development of gas, by putrefaction in the meshes of the submucous tissue of the gut, forcing out the mucous membrane. In the same experiment on the body of a woman of mature age, he failed in causing any protrusion, and on careful dissection he found numerous little cicatricial bands binding down the mucous membrane to the muscular coat beneath. There were in this cadaver several small folds of loose integument at the verge of the anus—evidences that slight prolapse had existed at some previous period which had provoked enough exudation to account for the cicatricial bands of adhesion.

there is no more prolapse. It is, moreover, a very unusual thing for the prolapse ever to recur after this operation, if well done; for the parts become more firmly consolidated as the exuded plastic lymph becomes developed into tissue.

This, then, is the simple mechanism by which operative surgery radically cures ordinary cases of uncomplicated prolapse. In the perfected details of the operation as done at the present time, the problem as to the safest and most effectual means of producing the necessary traumatism has been decided in favor of the actual cautery, and, in applying it, the ingenious and convenient apparatus of Paquelin leaves little to be desired. The only precaution to be enforced in the use of the actual cautery is, that it should be applied in longitudinal and vertical stripes, or at isolated points, so as to avoid producing a continuous ring of eschar around the whole circumference of the gut, which might cause cicatricial stricture.

The actual cautery, so much extolled by Severinus, and so largely employed for many purposes in the earlier days of surgery, is one of the most ancient remedies for prolapse, and it was, undoubtedly, effectual; but its extravagant and injudicious use led to subsequent stricture, and for this reason, probably, it fell into disuse. At least, this is what I infer from the following record of an operation by Prof. Kluyskaens, of Ghent, who cured a woman of fifty of a large old prolapse: "Three irons, heated almost to whiteness, were successively applied to the mass, and, not satisfied with this, he introduced one of them into the anal orifice, so as to fairly touch every portion of

the protruded gut and reduce it to an eschar."* In a similar case, Dieffenbach, having first reduced the prolapse, and stuffed the rectum with charpie so as to make the anus bulge, passed the cautery-iron slowly around along the line of junction of the skin and mucous membrane, his object being to bring away a ring-like eschar, and thus secure subsequent contraction. Esmarch, even now, expresses a strong preference for the actual cautery employed in this liberal style.† He burns the entire surface of the protrusion, in a chronic case, until it is charred and dry, and then, smearing it with glycerine or oil, replaces the mass.

It may possibly be justifiable to get up a stricture intentionally by this method of operating, as an alternative for so hopeless and distressing a condition as that produced by a large old prolapse in an elderly person; but, in the hope of effecting a cure without so much risk, I would advise you to adopt a modified use of the cautery, somewhat after the following plan: Having etherized the patient, elevated the hips as in Sims's position, reduced the prolapse, and introduced a speculum of his pattern of the largest size, proceed to draw a line upon the mucous membrane, with the cautery at a dull-red heat, parallel with the axis of the gut, and repeat this four or more times at equal distances, carrying the cautery each time from a point three inches or more above the anus slowly down through its orifice, and terminating the line of eschar externally where the delicate integument covering the sphincter joins the true skin. You will thus have a series of parallel vertical stripes of cau-

* *L'Observateur Médical Belge*, 1834.

† Chapter on diseases of rectum in the *Handbuch* of Pitha and Billroth, p. 152.

terized tissue, the lower extremities of which will appear as rays diverging from the anus. The lines of eschar may be made more numerous, deeper, and broader, according to the volume and duration of the prolapse. In a child, or where the protrusion is not voluminous or of very long duration, I would use a delicate cautery, perhaps no thicker than an ordinary probe, but for a larger tumor, in an adult, a more bulky iron; but, in any case, it should be bent nearly to a right angle a short distance from the button at its extremity, so that this may reach all points of the concavity of the rectal surface. By operating in this manner, I believe you would get the full effect of the cautery in producing retractile cicatrices, with the least amount of danger of subsequent stricture. Where, after cauterization, a cicatrix is left which encircles the whole circumference of the bowel, constriction in some degree must follow. In a very bad case, an operation of this kind might be repeated, new lines of eschar being made in the intervals between the old ones. This I did in the case of a young girl of thirteen, with defective intelligence, who had an enormous prolapse which had existed from infancy. In this case I added to the linear eschars small scattered points made with a slender, probe-pointed cautery; the effect of the latter, when applied over the sphincter, was remarkable in arousing its contractility.

I have described this operation somewhat fully, as I believe it to be the best method of employing the actual cautery, and applicable to every stage of prolapse amenable to cure by local means.*

* This method has received the sanction of Mr. Allingham's large experience, as seen in the following quotation from the last edition of his work on

But the potential cautery, in the form of strong nitric acid, is also sanctioned by high authority. It acts in a similar manner, and, when judiciously applied, is certainly competent to effect a cure, even of a large prolapse of long standing.*

I should advise you, if you select this remedy, to confine its application, also, to vertical stripes, as in the case reported by Fleming, for I have been called upon to operate upon a bad case of stricture that followed its too diffuse and liberal application.†

Diseases of the Rectum, London, 1879: "In my last edition I said, 'Dr. Van Buren, of New York, has recommended, in these intractable cases, the application of the actual cautery to the gut in spots or lines, and also to the verge of the anus over the external sphincter muscle, so as to get contraction, and thus support the bowel. This strikes me as a very good suggestion, and I shall certainly try it on a case where other means have failed.' I have now used this method on many hospital and private patients, and effected permanent cures" (pp. 164-5).

* Dr. J. Ashhurst, Jr. (in *Am. Jour. Med. Sciences*, January, 1873, p. 135), reports the cure of an aggravated case of complete prolapse in a child by applying nitric acid in a broad circular strip around the tumor, sparing the immediate vicinity of the anus, and subsequently plugging the rectum. In the same periodical (for July, 1835) there is an abstract of a carefully treated case, with minute details of symptoms, in which Dr. Christopher Fleming, of Dublin, cured an "aggravated case of procidentia in an adult." The acid was first applied in lines a quarter of an inch wide and two inches long, at four points, and, on a second application, more indefinitely.

† A case is related by Allingham (first edition, Philadelphia reprint, p. 201), of a young woman who came to St. Mark's Hospital suffering from stricture without ulceration, about three inches from the anus, which had been caused by the application of strong nitric acid for the cure of prolapse. There is a case recorded by Surgeon B. A. Clements, United States Army (*Am. Jour. Med. Sciences*, July, 1861, p. 38), who painted a large prolapse in an adult (soldier) with nitric acid, and got a positive and satisfactory cure, without pain. Dr. Clements had an opportunity of examining this man five months later, and reports no stricture. But I should hesitate to receive a solitary instance of negative evidence, although of great interest, as a warrant for this mode of using the acid. It was, probably, applied with sufficient strength and freedom in this case to cause plastic exudation in the submucous tissue, and, therefore, it cured; but not strong enough to cause a *slough* of this tissue, which is pretty certainly followed by a retractile cicatrix. Here is a distinction requiring both judgment and delicacy in manipulation.

I would caution you, therefore, not to paint the acid, nor any other escharotic, indiscriminately over the whole surface of a prolapse, without careful consideration.

Atony and possible wasting or fatty atrophy of the sphincter-ani muscle are the serious impediments in the way of a permanent cure of old prolapse of the rectum; and, where a repetition of the actual cautery is not available, I would recommend the use of the electro-magnetic current, which possesses much power in restoring the lost function in other voluntary muscles.

Dupuytren proposed, in these cases, to diminish the diameter of the anus, and also of the bowel just within, by removing, with strong scissors, an elliptical fold of integument at three equidistant points, the fold including the skin just without and also a portion of the membrane just within the orifice.*

Robert, another French surgeon, and Dieffenbach, of Berlin, went still further, and cut out wedge-shaped masses from the over-dilated orifice, afterward applying deep sutures to close the wound, and thus diminish the outlet; and the latter, in other cases, passed stout ligatures beneath portions of the prolapse near its base, and, making traction, cut out, with strong curved scissors, the portion thus drawn

* Duchaussoy, whose paper has already been referred to, says that this operation of Dupuytren was always resorted to by Guersant, at the hospital for sick children, in Paris, in cases too extensive to be cured by simple cauterization of the verge at equidistant points by the hot iron; and he makes the interesting remark that the prolapse was often arrested at once by the cutting operation, although the puckering relied upon by Dupuytren to cure the affection did not follow for days or weeks. The sphincter was evidently stimulated to increased contractility by the simple traumatism, in the same way, I suppose, as a fissure excites spasm.

upon, and even, in some cases, extirpated the whole mass. The late Valentine Mott modified Dupuytren's operation, in an aggravated case of prolapse in an adult, by removing several larger elliptical portions entirely from the mucous membrane, and drawing together the edges of the resulting wounds by sutures, in addition to Dupuytren's radiating incisions at the verge.

I feel entirely justified, by the absence of any very satisfactory results, in advising you to avoid these cutting operations, unless called for by exceptional complications; for the actual cautery, in consequence of the recent improvements in our modes of applying it, is equally efficient, and infinitely more prompt and safe.*

Of course, after any of these operations, the patient should be confined to a horizontal position for a week, a bed-pan being employed, when the bowels act, for at least double this period, to diminish the possibility of relapse. If laxative medicine is required, castor-oil is to be preferred, and its action aided, if necessary, by a tepid enema to facilitate defecation.

Finally, I must warn you against undertaking the entire removal of a prolapse, especially if the tumor be large. The mention of this operation, which still lingers on the pages of most of your text-books (although dropped from the most recent), implies a sanction of it

* It has also been proposed to tie off little masses from the surface of a prolapse by ligatures, imitating the operation for tying off internal piles, and suggested, no doubt, by the good effects of the latter operation in curing the prolapse present in such cases; and Dr. Beane, of this city, influenced probably by similar reasoning, recently reports the cure of a large complete prolapse, in a woman of forty-two, by applying the clamp successively to the tumor at four points, enclosing at each point a fold of mucous membrane an inch and a half long, cutting off half the tissue projecting beyond the clamp, and cauterizing the remainder.

which is based for the most part upon imperfect diagnosis, and only justified by the argument of imitating Nature, inasmuch as recovery has, in exceptional cases, followed sloughing of the tumor. With the means of palliation and of radical cure now at our command, and in view of the danger of opening the peritoneal sac, I should hesitate to endorse such an operation as justifiable.*

In an extreme case which had resisted reduction by taxis under ether, I would elevate the patient's pelvis, apply cold, even ice, to the tumor, give opium internally, and, if there were any evidence of extensive invagination, I would take into consideration the possible propriety of explorative laparotomy.

* Dieffenbach, as I have mentioned, includes extirpation among the operations he has done for the cure of prolapse, and it is endorsed by Bardeleben, Copeland, Liston, Blandin, and Chassaignac, but I have found no record, distinct and authentic, of a successful result following it where the tumor was large, although, no doubt, exceptional cures may have occurred. Brodie, in the most aggravated cases, for which he suggests no other resource than "the horizontal position and a course of Ward's paste," proposed to apply ligatures and then cut off the tumor. He has never known it to be done, but thinks it right to imitate Nature in her occasional sloughing from invagination ("Lectures on Diseases of Rectum," in *London Med. Times and Gaz.*). These opinions must have been based upon the false doctrine, promulgated by Boyer and Levret, that a prolapse always consists of mucous membrane alone. Even so high an authority as Mr. Erichsen makes the decidedly equivocal statement (in the last edition of the *Science and Art of Surgery*, Philadelphia, 1878, vol. ii, p. 705) that continuity of the surface of the prolapse at its base with the integument investing the borders of the anus, without any intervening depression, "constitutes the mark of distinction between ordinary prolapse and invagination of the whole thickness of the gut; for, in the latter affection, which is extremely rare, there is a deep and distinct sulcus between the protrusion and the margin of the sphincter;" or, in the nomenclature I have adopted, the presence of a "sulcus" is the diagnostic mark between *partial* and *complete* prolapse. Subsequently, under "treatment" (at p. 706), he says: "When the prolapse is considerable, and the ordinary palliative treatment after a proper trial fails in effecting a cure, it will be necessary to remove the protruded mass by operation." Now, whoever follows this advice, relying upon the absence of a sulcus, and impressed with the idea that invagination of the whole thickness of the

It remains for us to consider what treatment is called for in the third variety of complete prolapse, where the rectal protrusion is the result of more or less extensive intussusception, and consists mainly or entirely of the invaginated mass—what Esmarch styles a *prolapsus coli invaginati ex ano*—a protrusion of the already invaginated colon through the anal orifice. Here there is, generally, an over-dilated anus, but the lower rectum, excepting the consequences arising from the presence of the tumor, which can be readily replaced in its cavity—although unredacted as regards invagination—is otherwise healthy. It is plain that none of the operative methods hitherto described can meet the indications presented by such a case as this. Tightening up of the anal orifice might prevent protrusion externally, but it could do no more. In truth, the essential feature of this form of prolapse, which renders it so grave in character, so almost necessarily fatal from its very nature, is the intestinal intussusception, of which it is the outcome. If there are

gut is "extremely rare," will be liable, if he employs the knife, to open a peritoneal pouch, and possibly to witness the escape of coils of small intestine; and, in any case, he will incur the danger of losing his patient by peritonitis, as in the case which I have mentioned, in which there was no "deep and distinct sulcus between the protrusion and the margin of the sphincter." I regret to differ with Mr. Erichsen, but am compelled to reassert the facts as I have observed and stated them in describing what I have denominated "the first and most common variety" of *complete* prolapse—which I have found by no means rare—namely, that the whole thickness of the bowel, commencing at its lowermost portion, slips through the sphincter, and that, in this common variety of the affection (which too often passes for prolapse of mucous membrane alone), *there is no sulcus whatever*. Trélat and Delens, in the *Dict. Encyclopédique* (t. ii, second series, p. 717), the best French authority on this subject, express the opinion that the sulcus in question should not be regarded as a differential sign of absolute value, for "its absence, and the consequent *direct continuity of the skin of the anus with the mucous membrane covering the tumor, is frequent, even where the prolapse includes all the coats of the bowel*" (p. 720).

any cases in which spontaneous recovery from this condition has taken place, except by sloughing of the invaginated mass, I have been unable to find them; and there are only two or three instances, in a collection of one hundred and thirty-one cases of this kind, in which a judicious repetition of copious injections of water or air, with inversion of the body and the use of anæsthetics and opium, seems to have been followed by a successful result.* Nevertheless, these remedies should be faithfully tried. Howship, many years ago, praised the effect of copious injections of warm fluid deliberately thrown into the bowel with a certain amount of gentle, guarded force. This measure is properly alternated with the insufflation of air by means of a bellows or the introduction of carbonic-acid water from a syphon.† In a child, the action of

* See Hutchinson's table, already quoted (*Med. Chir. Trans.*, vol. lvii, 1874). There is a case of recovery in a child, reported by M. Caberet (*Schmidt's Jahrbücher*, 101, 1859, p. 323), with a prolapse twelve inches long. A sound could be passed up some distance between the walls of the rectum and the tumor. Reduction was effected by the aid of a gum-elastic bougie, which was left in several hours to prevent relapse. According to Mr. Hutchinson, a similar measure succeeded in the hands of Dr. Osborne. There is a case of success following the use of enemata (*Lancet*, March 19, 1859, p. 287) in a child of eighteen months. A tumor could be felt in the rectum. Powerful injections of warm water were employed, followed by cautious narcotism. In Professor Sands's more recent case of successful abdominal section for obstruction in an infant, where the tumor could be felt in the rectum, the bulk of the invagination was very much diminished in size by injections and other means, but entire reduction could not be accomplished.

† Brinton's estimate of the relative merits of injections of water and of air seems to me to be just and well expressed. Speaking of the latter, he says (*Intestinal Obstruction*, London, 1867, p. 119): "There are certainly instances on record in which an obstruction, having every symptom of an intussusception, has been suddenly removed by an inflation of the patient's rectum with a pair of bellows, the relief having instantaneously followed that severe pain which complete distention brings about. And in one case this successful inflation was accomplished by successively injecting the solutions of the sesquicarbonate of soda and of tartaric acid, so as suddenly to effervesce within the intestines

an enema may be assisted by holding the body suspended by the feet, with the head downward; and it may be repeated while the abdominal muscles have been set entirely at rest by an anæsthetic. After judicious perseverance in these manœuvres for a reasonable time, the patient should be cautiously narcotized, in order to quiet the peristaltic action which is constantly pushing on the invagination. This point of practice and also the irrationality of administering strong purgatives in obstruction of the intestines have been ably enforced in the writings of the late Dr. Brinton, of London.* If the patient's condition justifies a repetition of these efforts, they may be repeated; but in the case of an infant, where symptoms of acute strangulation are urgent, you must not persevere many hours, for there is a hope of relief from the knife, and, as in strangulated hernia, an operation, to secure the best chance of success, must be done early.

Except in the more acute cases of complete strangulation, which occur most frequently in very young children, invagination to the extent of rectal prolapse is a condition of slow progress, because, as Monro remarked of his cases, "there is a narrow passage for

of the shrieking patient. Not having personal observations of this kind to offer, I am disqualified from criticising such a procedure, save to point out that, while experience seems almost to limit its usefulness to intussusception of the large intestine, it appears to be, on the whole, a more sudden and violent, but less manageable and powerful, distensive agent than a liquid enema, which, with reasonable care, may be easily made to fill the whole large intestine, as far as the ileo-cæcal valve, without inflicting upon the patient any danger or even much suffering. Indeed, in the early stage of obstruction, the quantity in which such an enema can be introduced and the state of the belly during its presence in the large intestine materially help to fix the locality of the obstruction, by demonstrating whether it is or is not above the ileo-cæcal valve."

* *Lancet*, April 11, 1863; and *Intestinal Obstructions*, etc., London, 1867.

the fæces in all of them." For this reason, the remedies just detailed are not so urgently demanded, and more attention is often given to means for reducing and retaining the prolapse. If the invagination is to be disentangled, its reduction must be begun from below, i. e., the portion of gut last everted must be tucked in first, as in the ordinary taxis for reducing a hernia, and there is nothing to be gained by pushing up the whole tumor in a mass. Bardeleben makes a point of applying pressure, as by a small sponge and elastic bandage, upon the lowermost extremity of the protrusion, where the orifice is situated, in order to effect its gradual return by *inversion*. Cabaret succeeded by tucking in the invaginated gut by the aid of a bougie.

But, as we have seen, success has been rarely attained by any of these devices. Amputation of the invaginated mass, as in the case in which the Florentine surgeon mistook it for a polypus, or in Holmes's case at St. George's Hospital, where sloughing had already set in, can hardly be recognized, seriously, as a remedial measure, although it has the same justification as the perfunctory operation of extirpation, heretofore generally admitted. Thus, in cases of prolapse with extensive invagination, death takes place almost inevitably, and, as a rule, by the slow process of exhaustion—from interrupted function of the intestine, perhaps diarrhœa, aided, in children, by the constant straining and tenesmus, and, possibly, by gradual sloughing of the prolapsed parts—rather than by the more rapid process of strangulation and incomplete obstruction. The occurrence of peritonitis seems to be singularly infrequent. With this very unpromising outlook, Mr. Hutchinson, of the London Hospital, in

1873, having already witnessed the fatal issue of several similar cases, following the precept that a doubtful remedy is better than none, determined to open the abdomen in order to reach the invagination and restore it to its natural condition. This he succeeded in accomplishing without any difficulty, the whole operation occupying but twenty minutes, and his patient, a child of two years of age, recovered without an untoward symptom. In 1875, Mr. Howard Marsh, of St. Bartholomew's,* in a similar case of invagination with rectal protrusion in a child of nine months, "pale, wasted, and much exhausted," repeated the operation, and succeeded in disentangling the gut with equal facility. The infant recovered well from the shock of the operation, but fell into collapse some ten hours later and died. Examination of the body showed that the invagination, though of the ileo-cæcal variety, "had left scarcely a trace of its presence." These two cases, especially the first one, tended to modify the unfavorable impression prevalent in the profession as to the propriety of this operation, which is now spoken of as "laparotomy," a term applied to it by our countryman, Dr. J. Ashhurst, Jr., of Philadelphia, and adopted from him by Bryant. In 1878 laparotomy was repeated with success by Professor H. B. Sands, in this city, on an infant with acute strangulation from invagination. The tumor could be felt from the rectum, and also by manipulation of the abdomen, so that the diagnosis was clear. There was somewhat more delay experienced in disentangling the invaginated gut in this case, and its brilliant success was largely due to the early recourse to abdominal section.

* *St. Barth. Hosp. Rep.*, xii, 1876, p. 95.

I can not discuss, here and now, the considerations which influenced Brinton, in 1867, and Ashhurst, in 1871, and others who had carefully studied the history of this subject, to conclusions against abdominal section or gastrotomy, as it was then called, in intussusception; but the reasons justifying interference given by Hutchinson, Marsh, and Sands, and, above all, their success, seem to me to make it our duty, in the presence of so hopeless a condition as prolapse with invagination of this kind, to stand ready to imitate them.

In addition to the increasing confidence inspired by anæsthesia and antiseptics, and the decreasing fear of peritonitis derived from the experience of the ovariologists, the two principal reasons which make it proper to assume this position are these: 1, the certainty of diagnosis derived from the presence and peculiar features of the rectal tumor or protrusion; 2, the almost utter hopelessness of the prognosis without interference, which includes the poor chance of benefit from forced injections, etc., as well as the rarer possibility of sloughing.*

In conclusion, I must caution you not to wait in these cases for violent symptoms to justify serious measures. In not a few of the reported cases, these symptoms were strangely wanting, and, in others, they were by no means severe in proportion to the danger. And do not lose sight of the distinction

* Mr. Hutchinson has put his opinion on record in these words: "In the peculiar form of intussusception beginning at the cæcum and advancing until the inverted ileo-cæcal valve presents at the child's anus, I should suspect that an operation will always be required, for I know of no reliable record of the recovery of such a case, either by gangrene or by the measures to which we may apply the name of rectal taxis." (*British Med. Jour.*, August 31, 1878.)

between cases of acute strangulation; as it occurs in infants, and the more numerous chronic cases in which there is a narrow passage still open. It is to these latter especially that I now refer. When, therefore, a study of a case of prolapse has led you to recognize the presence of an irreducible invagination, do not be misled by the apparent absence of urgent signs of danger. With a certainty of diagnosis not attainable in any other variety of intestinal obstruction, you will have it in your power, in most cases, to plan out your operation calmly, and to select deliberately the most favorable moment for its performance.

Prolapse occurs, not unfrequently, through an artificial anus, both in the inguinal and lumbar regions. It is almost always "complete," and sometimes voluminous in size. This form of the disease calls for palliation by means of a truss or similar retentive means added to the ordinary dressing.

LECTURE IV.

POLYPUS AND BENIGN TUMORS.

POLYPUS of the rectum is not a common disease, although it is by no means so rare as is generally supposed, and it occurs for the most part in children, but sometimes in adults, and even in old age.

A little more than half a century ago this affection was unknown. Sir Astley Cooper, in the case of a child who sat upon a needle which entered the bladder and formed the nucleus of a stone, upon which he operated in 1823, mentions incidentally that he discovered something red protruding from the child's anus. He pulled upon it and drew down the rectum, disclosing a narrow neck to the mass. He cut it off, and there was some subsequent bleeding. In lecturing on this case he remarks that he had never before even heard of such a disease.* At the present day it is encountered with increasing frequency (probably because it is sought for more intelligently), and it has been found to comprise several distinct forms of disease; in fact, most of the benign tumors of the rectum are clinically included under the title of polypus. In its simplest form, a little, elongated, fleshy-looking tumor, consisting in its structure of the microscopic

* *Lectures on Surgery at Guy's Hospital*, in *London Lancet*, 1824.

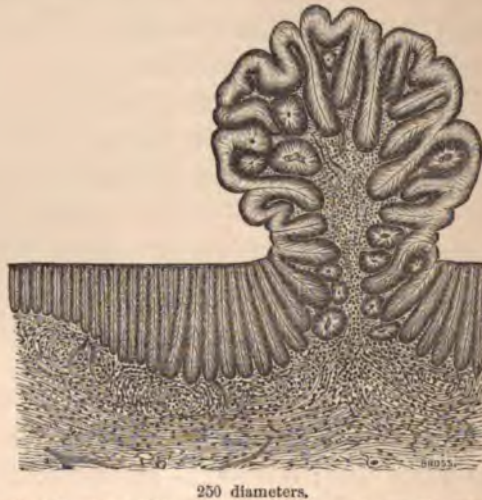
elements of glandular and connective tissue, and covered by the mucous membrane of the bowel, which has become stretched out so as to form a slender pedicle for it, presents itself at the anus, protruding after a stool very much like an internal hæmorrhoid, for which at first it is generally mistaken. Sometimes, indeed, through the bruising and strangulation thus encountered by the action of the sphincter, the polypus becomes congested and bleeds; but, on examination, it is found to be somewhat harder in consistence and less vascular than a hæmorrhoidal tumor, and, following it up with the finger, it is found to be connected with the wall of the bowel, well above the sphincter, by a narrow and constricted neck. Until it has grown large enough to come out in this manner at the anus, a polypus of the rectum causes little or no inconvenience; its existence, in fact, has probably not been suspected. But it will, sooner or later, give rise to bleeding, often very considerable in quantity, recurring at every stool, and always exhausting by its persistence; it occasions more or less straining and tenesmus, tends to increase in bulk, not unfrequently brings on prolapse, and may even become a cause of irritable ulcer, abscess, and fistula.

You will naturally ask, What are the causes of this disease? and Why is it called polypus? In regard to causes, as in the case of other tumors, there can be nothing more obscure: a morbid growth takes place in the mucous membrane of the rectum or in the layer of connective tissue beneath it; the muscular fibers of the gut, whose office it is to contract upon and extrude everything from its cavity—even sometimes its mucous membrane, as we have seen—extrudes

also, little by little, the new growth which, finally, retains its attachment to the wall of the bowel only by a narrowing neck or stem, and hangs loosely in its cavity, like a cherry. As to the name "polypus," it comes from a vague analogy with certain low forms of animal life which habitually attach themselves, by a sort of neck, to some other substance—the hydra, for example.

You may ask again, perhaps, Why are not all growths from the rectal walls—epithelial cancer, for instance—extruded in the same manner as those to which we give the name of polypus? Here you touch a point that underlies the whole pathology of what are called malignant growths. The only absolute characteristic of malignant growths is that they do not tend to get well. Now, the mode of formation of a "polypus" evinces a distinct tendency to get well by a process of elimination or extrusion from the organism. Based on this fact is the clinical rule that tumors in any region that present themselves in the shape of polypi—designated usually as "polypoid tumors"—are benign in their nature, the characteristic shape indicating the tendency to be cast off; and this rule has not many exceptions. Polypi are more frequent in early life; epithelial cancer occurs more often in old age. When an adult presents a rectal tumor which manifests a tendency to form a pedicle, however imperfectly, I always feel more hopeful as to the chance of its not returning after removal. The two most promising cases in which I have recently advised an operation in so-called cancer of the rectum presented this feature: one, an elderly gentleman with a sessile tumor growing from the posterior wall;

the other, a young woman from whom her physician had removed a polypus a year before he sent her to me with a distinct reproduction of the growth, but with a much broader base. On the other hand, I should regard suspiciously a rectal tumor with a broad base, even in a young subject; and such cases (happily they are rare) develop almost certainly the clinical features of cancer. The introduction of the subject of cancer in connection with polypus is unavoidable, for the simple reason that, in explaining the histological structure of a tumor like that just



250 diameters.

FIG. 8.—Vertical Section of Mucous Membrane bearing a Young Growth. The follicles of Lieberkuhn are seen, gradually increasing in size from left to right, until they extrude themselves in the form of a polypus, which is seen to consist of the enlarged and irregularly shaped follicles with their correspondingly enlarged lining of columnar epithelium. 1872. (Esmarch.)

described, as the simplest and least uncommon form of polypus, I am obliged to tell you that it consists almost entirely of the hypertrophied tubular glands of the rectal mucous membrane (the follicles of Lieber-

kuhn) lined by columnar epithelium, and developed in a stroma of embryonic cells—Figs. 8 and 9.

Fig. 9 represents, under a still higher power, the structure of a benign polypus, recently removed from a boy of eighteen, which had caused much anxiety by producing a constant loss of blood.



350 diameters.

FIG. 9.—Section of a Benign Polypus, at Right Angles to its Surface, showing Internal Structure, and also Free Margin lined with Columnar Epithelium. Prepared and drawn from nature by Mr. Samuel Alexander, under direction of Professor W. H. Welch, M. D. A, cross-section of a Lieberkuhn follicle lined by cylindrical epithelium; B, same, its epithelium having mostly undergone change into what are called "goblet-cells"; C, section of a blood-vessel. The black points are nuclei of cells, considered identical with the leucocytes or lymph-corpuscles always present in the meshes of connective tissue, which may be brushed out of a loose reticular stroma—the whole constituting what is now called "adenoid tissue."

Now, these are the same histological elements you would recognize in examining an epithelial cancer removed from the same locality. Their different behavior, giving rise to distinctive clinical aspects, con-

stitutes the sole claim of these growths to the designation of benign or malignant. These distinctive clinical aspects we shall study hereafter in connection with cancer of the rectum.

After this unpleasant recognition of the histological identity, as to its elements, of this form of polypus, which is technically called "adenoma," with true epithelioma, I must hasten to tell you that polypus in children is most frequently of this nature, and that it never returns after removal; it is, in fact, a typically benign tumor. It is obvious, then, that the circumstance of young life and the presence or absence of a something beyond this that we can not grasp, which prevents the disease from getting well, constitute the main differences between adenoma of the rectum and cancer. Since Robin's first announcement, in 1852, that soft polypi of the rectum consisted for the most part of hypertrophied tubular glands lined with columnar epithelium, the obscurity that masks the essential difference between this form of disease and epithelioma has been a constant source of doubt and fear to the practical surgeon in all suspicious cases of rectal disease; for the clinical features of these tumors, as we shall see, are often, in the case of an adult, not sufficiently well marked to render their distinction, even under the microscope, an easy task.

In children the tendency to exuberant overgrowth of the tegumentary tissues, as exemplified in the frequent appearance of warts upon the skin, fairly accounts for the analogous production of similar textural outcroppings on the mucous surfaces within, which would seem, in either case, to disappear with equal certainty of their own accord, although I had

once a case of a warty growth from one of the chordæ vocales in a child of six, which required extirpation by laying open the larynx to prevent suffocation. Warts affect the hands in children because their skin is more exposed to sources of irritation; follicular polypi, classified by Rindfleisch and by Cornil and Ranvier as papillomata or warty growths, and which also occur occasionally at other localities in the intestinal canal, may affect the rectum more frequently for a similar reason.* These adenomatous growths are certainly less frequent in the adult than the more purely fibrous polypi.

It is not surprising, therefore, that, when the "polypoid" shape is not a prominent feature in a rectal growth occurring in an adult, and especially when such a growth has fallen into ulceration and led to fatal symptoms in a patient of advanced age, it should be regarded, even on inspection in the dead-house, as a case of cancer, when, in reality, the disease is simple adenoma. This has actually occurred to a hospital surgeon of long experience, who has frankly placed the case on record.†

* In the *Trans. Lond. Path. Soc.*, vol. xxiv, p. 114, Mr. Goodhart gives some representations taken under a low power from sections of a small velvety mass removed from the rectum of a girl of six and a half, who had been bleeding. It was attached behind and to the right side, two or three inches from the anus. He says, "It proved to be glandular, or what Billroth calls 'adenoma.'" "Others," he adds, "would probably call these growths *papillomata*, and, anatomically, the latter term is the more correct; they are no more than papillary growths developed from the epithelial layer of the mucous membrane." Mr. Hulke, also, after a careful histological study of a similar specimen (*id.*, vol. xxii, 1871, p. 146), says, in conclusion, that these glandular polypi "may be regarded as local outgrowths of the normal glandular elements of the mucous membrane."

† The specimens taken from the body of a man of fifty-seven, who died in the Middlesex Hospital in 1868, were presented to the London Pathological Society (see *Trans.*, vol. xix, 1868, p. 216) by Mr. Henry Arnott, who judged, from their naked-eye appearance and from the clinical features of the case,

Rectal polypi of the adenomatous or glandular variety do not generally reach a larger size than a small plum, although Syme and others have described cases in which the growth was the size of a pear; and Esmarch alludes to a remarkable tumor of this kind that completely filled the rectum and weighed four pounds.* They are soft but firm in consistence, and covered continuously by the mucous membrane of the bowel, which, including the artery and satellite veins by which the little tumor is supplied with blood, constitutes its pedicle. These tumors would undoubtedly grow larger, but for their tendency to extrusion, by which they are, so to speak, prematurely cast off; and this termination, no doubt, takes place frequently without the existence of the little tumor having been recognized. There may be, in exceptional cases, two or three of them, and they have been noticed in the dead-house, scattered at rare intervals along the intestinal canal, and recognized as a possible cause of intussusception. As an exceedingly rare case, Richet † speaks of a man of twenty-

that the disease was epithelioma. But, on subsequent careful microscopical study, the disease proved to be "a purely local growth belonging to the 'adenoid group,' the result of an active hyperplasia of the tubular glands of the rectum." There was entire occlusion of the rectum, and sections of the mass showed a good deal of colloid formation, which was evidently the result of the gradual accumulation of the products of secretion and degeneration of cell structure, leading to the production of loculi filled with gelatinous material. The report is accompanied by drawings of the attenuated fibrous stroma of the tumor by Dr. Burdon-Sanderson, illustrating this pathological feature of the growth, which, according to the judgment of the committee, presented no evidences of any heterologous formation. The dendritic, wavy, villous character of the altered tissue of this growth on its ulcerated surface was considered very characteristic of adenoma.

* *Ut supra*, p. 176.

† *Traité Pratique d'Anat. Méd. Chirurg.*, fourth edition, Paris, 1873, first part.

one, subject to exhausting hæmorrhages from the rectum, from whom he removed, mainly by cautery, from sixty to a hundred polypus growths, varying from the size of a pea to that of a cherry. These were examined by Robin, and found to consist of hypertrophied rectal follicles. Broca, in his work on tumors, refers to this case as one of "circumscribed polyadenomata." I have recognized this condition of the rectum, in which the soft warty feel of the overgrown follicles, their tendency to pedunculation, and the absence of the peculiar nodular hardness of cancer, seemed to warrant the diagnosis of "polyadenoma"; and I feel confident, also, that I have seen decided benefit follow a prolonged milk diet in such cases.

There are two other varieties of rectal polypus which take their origin, not in the mucous lining of the rectum, but in the sub-mucous layer of connective tissue, and they are usually described as the "hard" and the "soft" *fibrous*. The latter consists pretty much entirely of the ordinary connective-tissue elements, and is almost identical in structure with the "vesicular" nasal polypus; but in this very soft form it is not often found in the rectum.* As the pedicle of a soft fibrous polypus grows more slender, under the process of extrusion, the blood-vessels, of which it is mainly composed, are liable to constriction, and the substance of the little tumor becomes œdematous

* Mr. Hulke (*Trans. Path. Soc. Lond.*) describes a polypus, the size of a bean, removed from the rectum of a young woman at the Middlesex Hospital, as follows: "It consisted of a central mass of a delicate, finely fibrillated and nucleated stroma, pervaded by large and numerous blood-vessels, the walls of which were very thin. Externally the stroma became closer and less vascular, and at its outer surface it bore a distinctly papillated layer; this was covered by a thick epithelium, the deeper cells of which were small and round or roundly oval, and the superficial ones squamous. This form of epithelium is remarkable."

from the obstructed circulation ; the meshes of its connective tissue are thus distended with serum, and there is even a tendency to the formation of minute cysts. The contents of these cavities are sometimes glairy, mucoid, or jelly-like, and, when this is the case, the tumor has been described as a "myxoma." The hypertrophied glandular elements are generally present also in this form of tumor ; and their overgrown follicles, not receiving a constant supply of blood in proportion to their size, and failing in function, undergo atrophy, and fill up with a material like liquid glue. Such a tumor on section presents the appearances usually described as "colloid." These soft polypi are not distinguishable from one another by the unassisted eye nor by the feel.

The harder fibrous polypus is the least common variety, and is mostly met with in adults. It is an example of a true fibroma, taking its origin in the sub-mucous layer of the bowel, and pushing the mucous membrane before it as it undergoes the process of extrusion, and this is the characteristic behavior of all fibromata ; thus, its pedicle finally consists within of the vessels by which the tumor is nourished, and without of mucous membrane.*

* In the *Bull. de la Soc. Anat.*, of Paris, 1872, p. 497, there is a description of a little rectal fibroma, the nature of which was confirmed by Follin. It had been removed from a young woman of twenty-three, and varied considerably in bulk at different times when it was protruded at stool. This was explained by the mucous membrane being dragged down as a partial prolapse by the attachment of the tumor, precisely in the same way that an internal hæmorrhoid provokes a partial prolapse. It had been removed before its pedicle had fully formed, and the mass was found to consist of mucous membrane above, with a little, hard, spherical fibroma at its most depending part. Verneuil speaks of the hard, fibrous polypus as rare. He had removed one, the size of a small orange, from a man of fifty, who got well of the operation, but died later "*avec les signes d'une generalization*," by which he means, I presume, that it turned out to be

In connection with their histology and mode of growth, we must recognize that all the varieties of rectal polypus have a strong natural tendency to spontaneous cure, by gradual attenuation and final rupture of the pedicle, which permits the tumor to be discharged at stool, and healing follows at the point of separation. This result, which is noticed by most practical authorities as not uncommon, is illustrated in a case recorded by that excellent surgeon, the late Mason Warren, of Boston. In a gentleman who had felt some unusual sensations in defecation, Dr. Warren discovered a hard fibrous polypus, the size of a walnut, adherent to the rectal wall at a short distance from the anus by quite a slender pedicle. The patient, probably relieved in his mind on learning the simple nature of his trouble, did not return for nearly a year, and then in consequence of the pain he was suffering from an irritable ulcer which had formed, meanwhile, at the verge of the anus. While operating for this, Warren recognized that the fibrous polypus had disappeared. Probably, in escaping, after the rupture of its pedicle, it had fissured the orifice. It has been suggested that some of the unexplained instances of bleeding from the anus occasionally encountered are caused in this way.*

malignant. Houel mentioned a case, in a lady of thirty-three, of pure fibroma, as large as a lady-apple, removed fifteen years before by Velpeau, and the patient still remained permanently well. Malassez had examined a pure fibroma which showed the structure of a fibro-myoma, showing the analogy between fibrous polypi of the rectum and uterus.

* *Surgical Observations and Cases*, Boston, 1867. There are similar cases recorded. Macfarlane, of Glasgow, speaks of a man who, in quite a limited period, voided two quite large fibrous tumors with little antecedent trouble. A third, as large as a small orange, was discovered and removed by ligature and excision of its pedicle. Mollière, who quotes this case, remarks that it illustrates, probably, the natural history of all fibrous polypi of the rectum.

Warren's case illustrates, also, the clinical fact, constantly noted in connection with polypus, that this disease often coexists with fissure or irritable ulcer. Mr. Lane, one of the surgeons of St. Mark's Hospital for rectal diseases, in London, says that, out of thirty-three cases of fissure which he had seen, no less than

The same author copies, at length, a still more interesting case of a patient in the Hospital of Cambrai, but, unfortunately, a microscopic examination of the tumor is wanting; it is simply described as "positively fibrous." A married woman of thirty-four, in August, 1845, was taken with dull, heavy pains in the rectum, followed, later, by persistent diarrhoea and tenesmus. On exploration, a smooth, hard, round tumor, the size of a nut, was felt, attached to the rectal wall by a short pedicle. In the manipulation preceding its removal, the pedicle gave way, and the patient, after slight straining, voided it, together with a few drops of blood, and was promptly relieved of all her symptoms. On subsequent examination, only a slight roughness was felt at the point where the pedicle had been implanted, and the patient was discharged. Four months later, her symptoms all returned, when another but larger tumor was discovered attached in the same place. It was extirpated (how, is not stated), but there was so much subsequent bleeding that it was necessary to tampon the rectum with lint powdered with alum, which proved effectual. The patient again seemed well; but when she was examined two months afterward, in a precautionary way, no symptoms having, meanwhile, occurred, a third tumor, more than half an inch in diameter, could be felt projecting from the same point (*Maladies du Rectum*, p. 347). In the famous case of Enaux, which was under observation for several years, and reported by another surgeon, the patient is said to have had a large fibrous tumor in the rectum, which he voided after taking a purge; and, some years later, another similar tumor was also passed spontaneously. As much blood had been lost on both these occasions, when a third tumor presented itself at the anus, it was tied off; but this time the patient died, and, on examination of the rectum, nothing was found except the cicatrices at the points at which the several tumors had been attached.

In these rarer cases we can not fail to recognize that there is an unmistakable similarity between fibrous tumors of the rectum and those of the uterus, in their tendency to escape by elimination. I was once called to an elderly bed-ridden patient in the country, with pelvic pains and distress and a profuse leucorrhœal discharge, which I found to be caused by the presence of an enormous fibroma in the vagina, attached by a slender pedicle to the lip of the uterus. I succeeded in strangulating the pedicle, but was obliged to complete the delivery of the tumor from the vagina by the aid of forceps. The patient recovered her health entirely. In a somewhat similar case, a huge uterine fibroma had molded itself so accurately to the ostium vaginae in its efforts at escape, that the urethra had become occluded by pressure against the arch of the pubes, and I was called to relieve retention of urine.

nineteen were complicated with, and apparently dependent on, the presence of polypi, and he urges that a search should be made for a rectal tumor in every case of fissure, on the ground that its presence, by irritating the anal orifice and causing tenesmus, may prevent a cure.* I should think Mr. Lane's experience probably exceptional, finding so large a proportion of cases in which the two diseases were associated, for in quite a number of cases of fissure I have never yet found a polypus present, and they all yielded promptly to treatment. But the possible coincidence is always to be kept in view.

Most polypi may be described as presenting a moderately smooth and uniformly even surface, formed, in fact, by the mucous membrane of the rectum, which is their natural investment. Some present minute depressions like those of an enlarged tonsil, which are simply the orifices of the hypertrophied follicles; and, in the hard, fibrous variety, when of large size, surface ulceration, from failing blood-supply, may take place, giving an irregularity of feel suggestive of cancer, especially as the purulent discharge from an ulcerated fibroma is notably foetid. But there is a variety of the *adenomatous* polyp that requires especial notice: it has the feel of a huge warty growth, with a surface like a cauliflower, and belongs to the form of tumor called "papilloma"—the projecting papillæ of the mucous membrane in which it is developed as well as its depressed tubular follicles being both enormously hypertrophied, while its center consists of connective-tissue substance and

* "Clinical Observations on Diseases of the Rectum," London *Lancet*, July 22, 1865, p. 87.

blood-vessels. Mr. Curling, who describes this form of polypus as "villous tumor of the rectum," says that it has generally a broad base, is innocent in character, and has a remarkable disposition to bleed.* Gosselin, who calls it a "granular papilloma," gives a good representation of a specimen which he removed, in which the pedicle is quite small in proportion to the size of the growth—Fig. 10.



FIG. 10.—Villous, or granular, polypus.† (Gosselin.)

In a tumor of this kind recently removed from a gentleman of sixty-four, its base was broad, although the mass was distinctly sessile upon the posterior wall

* *Observations on Diseases of the Rectum*, London, 1876, fourth edition, p. 84.

† This figure is taken from Gosselin (*Clinique de l'Hôpital de la Charité*, t. ii, p. 660), whose history of the case I condense:

A man of sixty-two, of good constitution, entered La Charité, in 1869, with a history of the loss of from two to four ounces of blood at every stool for nearly three years, a considerable fleshy protrusion occurring at the same time, which he is obliged to put back by forcible pressure for several minutes. The case was at first supposed to be piles, but, on examining the protrusion, which

just within the sphincter, and the patient was sorrowful from loss of blood. I considered it safer that this tumor should be removed quite freely, and the case has terminated very hopefully. The feel of such an irregular warty surface in the rectum of an old man would be very suggestive of cancer, but the fact of its attachment by a more or less narrow pedicle justifies the hope that it may prove to be a pure adenoma. Esmarch speaks of these tumors as "villous polypi," presenting on their surfaces long, fine papillæ, branched, and covered with cylindrical epithelium. After ulceration and destruction of the mucous membrane, the surface of a villous tumor will be found to consist of embryonal cells, or granulation tissue. If a malignant character is present, its evidences will be found at the base of the tumor, where there is still mucous membrane, and in the behavior of its epithelium. I should be disposed always to remove these tumors liberally, even though the pedicle were slender.

In thus bringing so constantly before you the question of cancer in connection with the different phases

the patient forced out at will, it was seen to be a livid, bleeding mass, as large as a lady-apple, with an irregular and deeply lobulated surface, attached to the bowel by a pedicle about half an inch in diameter. The surface lobules varied in size from a grape-seed to a currant, and were each connected with the central mass of the tumor by a stalk from a quarter to a third of an inch in length. The tumor was removed by means of the *écraseur*, carefully and deliberately applied, eight minutes being employed in the section. Six hours later, however, the patient was seized with an urgent desire to go to stool, and voided a rectumful of blood, and fresh blood still flowed when the edges of the anus were pulled apart, so that the tampon was applied at once. No further accident occurred, and the patient was discharged well, although anæmic, within the fortnight.

Gosselin, in describing this tumor, says that it is of rare occurrence, and has not, as far as he knows, been described by French authors, but he refers to Mr. Curling, whose description of the "villous tumor" applies very accurately, he thinks, to this case, except in its not having so well marked a pedicle.

of rectal polypus, I am endeavoring to render the relations of these two diseases to each other, as they occur in the rectum of the adult, as little obscure as the present imperfect state of our knowledge will admit; and you will find it useful to have approached the subject by this route when we come to study cancer.*

As to the shape of rectal polypi, the terms usually applied to them—"pyriform," "ovoid," "strawberry," or "cherry-like," and "kidney-shaped"—are sufficiently descriptive of the great majority, but cases are now and then reported as "elongated," "worm-like," and "cylindrical," which are rare. Syme says that what he calls "the soft, vascular variety" sometimes "assumes the form of a worm from two to four inches in length." In a similar instance, a "tubular polypus," three inches long, was a source of great and persistent straining and irritation in a child of fourteen months, and finally caused a prolapse of the gut, bringing its attachment, which proved to be two inches above the anus, into view. It was tied off, and the child got well.† A polyp of unusual shape should always be closely scrutinized, keeping the possibility of invagination always in view.

To sum up the anatomical characteristics of polypi

* A very recent writer, who has devoted much histological study to this subject, concludes that "there is no distinct line of demarkation between the innocent adenoid growth called 'villous' and the malignant adenoid known as cylindrical cancer." This writer includes all the growths which consist of glandular epithelium, i. e., the columnar or cylindrical epithelium of the Lieberkuhn follicles, under the title of "adenoid disease"—from the simple benign polyp, or papilloma, to the most malignant form of epithelioma. (*Cancer of the Rectum: its Pathology, Diagnosis, Treatment, etc.* By W. Harrison Cripps. London, 1880, p. 121.)

† Case of Mr. Elkington, *Am. Jour. Med. Sciences*, October, 1844, p. 495.

of the rectum, we may assume that they are all explained by a local hypertrophy, or overgrowth, of one or more of the histological tissues which enter into the structure of the walls of the gut; and to grasp their nature fully we must also recognize the analogy between these tumors and the polypi which affect other mucous surfaces, such as the nasal passages, the larynx, the bladder, and the uterus.

As to the *diagnosis* of polypus, I may tell you confidently that, after careful study of symptoms and thorough exploration with the finger, or, in case of doubt, under ether and by the aid of the speculum, it rarely offers any difficulty; but there must be no hesitation, through false delicacy or other motive, in making a local examination, and here, as in other maladies of this region, the intervention of an anæsthetic will often happily smooth the way. Where symptoms point to its necessity, it becomes your duty to urge this measure. A small, soft polypus, with a long, slender pedicle, may elude the finger, which will be more likely to detect its presence if swept carefully around the whole internal surface of the gut within its reach; the pedicle will rarely be found attached higher up than two inches from the anus. In a child, bleeding from the rectum, especially if a reddish looking protrusion is also spoken of, means polypus, for bleeding piles do not occur in children. In an adult under fifty-five or sixty, these symptoms would almost certainly indicate internal hæmorrhoids, or, possibly, something worse. In a child, the frequent desire to go to stool provoked by the presence in the rectum of something to be got rid of, and the desire to strain in order to get rid of it, and the discharge of blood and

mucus that follows the effort, is very likely to be called "dysentery" by those in charge, and the physician who is under the impression that polypus is so very rare a disease may find himself prescribing for a "bowel complaint," or, perhaps, for "worms."*

There is, also, in some cases of polypus, a copious secretion of glairy mucus, or even of a more watery fluid, as in some uterine polypi, which, when the disease is in the rectum, is suggestive of diarrhœa. A rectal polypus usually causes no pain whatever, unless it protrudes at the anus, and in such event a growth may gain a considerable size without its presence being suspected. Dr. Fleming, of Dublin, mentions a case † in which the bladder was so irritable as to lead to the suspicion of the existence of a calculus, when, during the operation of sounding, prolapse of the rectum took place, and a large polypoid growth came into view, on the removal of which all uneasiness sub-

* It is not easy to get an exact idea how common a disease polypus is, nor what proportion of the cases occur in children. It must, undoubtedly, often undergo spontaneous cure without being suspected. Sir A. Cooper leaves a record of having seen but ten cases. Syme, on the other hand, says that he once encountered five cases in little more than a fortnight—two of which were in adults and three in children. Most of the cases seen by the latter "were in persons who had attained or passed the middle period of life." Allingham says (*Diseases of the Rectum*, third edition, London, 1879, p. 170), "I find that I have noted altogether fifty cases without complication as having occurred in my own practice. My statistics at St. Mark's Hospital show that, in four thousand cases of rectal disease, there were only sixteen of polypus *without fissure*." Twenty-eight of the fifty cases existed in children under fourteen years of age, and twenty-two in older persons.

Bryant, in his last edition, gives an analysis of eighteen cases, of which five were in adults, and thirteen were under ten years of age.

Guersant says that he saw six or eight cases every year at the hospital for sick children of Paris. Of Mr. Lane's thirty-three cases, eighteen were in adults.

Bokai, of Pesth (*Am. Jour. Med. Sciences*, January, 1862), found twenty-five cases of polypus in fifty-six thousand nine hundred and seventy infants.

† *Dub. Med. Jour.*, vol. ii, 1866, p. 487.

sided. The same author reports the case of an anæmic boy of twelve, under treatment for onychia, who was said to have bleeding piles. On a sudden attack of prolapse, the protruded mass was found covered with blood, and two pedunculated tumors presented themselves, each growing from the front wall of the gut by a narrow pedicle. Syme describes a case of fistula, which had already been twice cut unsuccessfully, in which, after the operation, he was surprised to see a lobulated tumor, nearly the size of a pullet's egg, protruding from the wound, and learned that it had occasionally protruded for twelve or thirteen years, but only partially.

A polypus may, therefore, protrude partially and recede spontaneously without being detected, and yet bleeding may occur at each stool. The presence of blood upon the perinæum or staining the linen of a young girl from this cause has wrongly been taken as evidence of premature eruption of the menses.

Thus, hæmorrhage in polypus of the rectum is the prominent symptom. When copious or long continued, it may cause weakness, pallor, and all the graver consequences of anæmia. Children bear the loss of blood badly, and this source of failure of health may be entirely overlooked, just as, in the adult, the damaging effects of the habitual loss of blood from internal piles are so frequently ignored. It is not always easy, without experience, even when a protrusion is under the eye, to distinguish an internal hæmorrhoidal tumor from a polypus. I have hesitated, in the case of an internal pile which had become hard and partially pedunculated from frequent traumatic violence by dragging and exposure; but, if you bear

in mind that a fibrous polypus is always attached well above the sphincters, and that a hæmorrhoidal tumor is confined to its own locality below, and has a broad base of attachment, you will not err.

Under the head of *prognosis*, it is only necessary to add that the dangers which are liable to follow failure in the early discovery and removal of polypi of the rectum may be ranged under these three heads: 1, the consequences of persistent loss of blood; 2, the tendency to provoke prolapse; 3, the possibility, in cases occurring after middle life, that an adenomatous growth may assume the characteristics of epithelioma. Bryant says that one of the worst cases of prolapse he ever saw was in a man of fifty, depending on a fibrous polypus attached some inches up the gut; the case was of twenty years' standing, and cured by removal of the polypus. This author speaks of a woman of forty-three, who also had a prolapse of twenty years' duration, in whom he found a polypus, and effected a cure by its removal.*

These cases again illustrate the necessity of early and careful local examination.†

* This is the "villous" polypus, figured by Dr. Moxon at page 673 of Bryant's *Manual*, second volume, second English edition.

† A case reported by Mr. Arthur E. Dunham (*Trans. Lond. Path. Soc.*, vol. xxiii, 1872, p. 116), of "intussusception of the rectum, with adenomatous growth," shows another phase of polypus. The patient was an unhealthy man of forty-four, who had been suffering from gradually increasing constipation, and, after a fortnight had passed without a motion, was finally subjected to colotomy at Guy's Hospital. The lower end of a tumor could be felt about three inches from the anus; it was rounded, smooth, firm, elastic, with a distinct depression posteriorly, into which a urethral bougie could be passed for a very short distance. The attachment of the tumor could not be reached. Its surface felt everywhere like that of a mucous membrane. "Intussusception, with new growth," was diagnosticated. The patient died four days after from erysipelas and "diffuse inflammation," with peritonitis. An invagination four inches in length, beginning at the upper end of the rectum, was found,

The *treatment* of rectal polypus is, as a rule, eminently satisfactory in its result. The usually slender peduncular attachment of the tumor invites removal, and its benign character justifies the accomplishment of this operation by the simplest measures; this proceeding completing Nature's obvious intention of elimination, as illustrated in the cases already cited, of spontaneous cure. The pedicle of a polypus has not unfrequently been ruptured by the finger, at the time of its detection, involuntarily, or by the slightest effort, and a cure has followed.

But the blood-vessels necessarily present in the pedicle of a polypus are always liable to bleed. As in the pharynx, they are surrounded, after being severed, by very loose connective tissue, and should never be trusted to Nature's hæmostatics, for slow and insidious hæmorrhage may occur even in an apparently trifling case, as has been recorded in frequent instances. All practical authors of large personal experience insist upon this point.* Measures should always be taken, therefore, to prevent any possibility of subsequent bleeding. Among these, rupture of the pedicle by twisting—torsion of the vessels, in fact—may be employed, and has often succeeded; but the best plan, undoubtedly, is to apply

and this had evidently been caused by thickening of the walls of the gut, which proved, on microscopic examination, to be adenomatous. Drawings of these appearances by Mr. Goodhart, which are appended, are almost identical with those of Dr. Burdon-Sanderson in the case of Mr. Arnott, already quoted, and equally non-cancerous in character.

* Professor Stoltz has a paper (in *Gaz. Med. de Strasbourg*) on polypus of rectum, with cases. In one of them he cut off the tumor with scissors without any bleeding at the time, but two hours afterward there was copious hæmorrhage, which put his patient's life in danger. It was arrested by injections of ice-water.

a ligature tightly around the pedicle, as near as possible to its attachment to the walls of the gut. Allingham has a case in which the pedicle was ruptured in the act of tying it, but no harm followed.*

Syme, who insists upon the ligature, advises that it be carried double through the pedicle by the aid of a needle, and tied on either side, so as to prevent the possibility of slipping; but this is only applicable where the pedicle is thick and fleshy, and it always involves the possibility that the artery may be transfixed by the needle—which would defeat its purpose. The simple ligature, strong enough, if necessary, to warrant its being tightened by all the surgeon's force, followed by section of the pedicle, is the best remedy, and it should be preferred in all cases. Gosselin, in two instances where the pedicle was fleshy, gave the preference to the *écraseur*, and bleeding followed in both. In consequence of this experience, which I recognize as not unusual with this instrument, he recommends the ligature. Neither the thermo-cautery nor the clamp presents any advantages in ordinary cases. For a tumor with a very short, thick

* "Duncan I—, æt. eighteen, came to St. Mark's in 1867. His health was generally good. For twelve months he has had something protrude from the anus in visiting the water-closet, and he had lost a quantity of blood. It retracted spontaneously on his rising up after the action. He has been under the care of many physicians and surgeons, and has always been treated for bleeding piles. He has a pain of a dragging, burning character in the rectum, but it is not severe. After an injection, a large, vascular, velvety-looking polypus, the size of a walnut, appeared at the verge of the anus. The pedicle was rather thin, and not so long as usual. I held it with a vulsellum while the house-surgeon applied a ligature; this was pulled so tightly that it cut the peduncle at once. I was apprehensive of bleeding, and so kept him lying down in the out-patient's room for a couple of hours, when, finding there was no hæmorrhage, I sent him home. In a week he came and said he was quite well." (*Diseases of Rectum*, third edition, London, 1879, p. 177.)

pedicle or with a broad base of attachment, good surgery will generally require a more formal operation and a more free and liberal removal than the ligature can accomplish—mainly in consequence of the difficulty in applying it accurately. Where division of the sphincter is required to gain room for the removal of a tumor from the rectum, the knife and scissors are preferable to the ligature in mass—vessels requiring ligature being tied as they are cut. In case of bleeding into the rectum, after rupture of the pedicle of a polypus, the remedy is to apply pressure by means of a sponge tampon, or by tying masses of lint at intervals upon a string, like the bob-tail of a kite, saturating them with a solution of sub-sulphate of iron, and introducing them one after another, gently stretching the anus, if necessary, to facilitate their insertion.*

Where the symptoms of polypus are present, but no tumor can be felt by the finger, the case demands thorough exploration of the rectum under ether, with the aid of position; for, although such cases are rare, a polyp may take its attachment as high as the sigmoid flexure, and even in time drag down the bowel so as to protrude at the anus. A most interesting and unfortunate case recorded by Broca, for the instruction of others, as he says, teaches us the fact that I have just stated, and affords a warning as to

* The sponge tampon consists of a fine cup-sponge varying in size according to the age of the patient, but too large rather than the reverse, to which a stout double ligature has been securely attached. This is crowded, dry, into the rectum, and well above the sphincters. The free ends of the ligature are then drawn down firmly, and securely tied around a second sponge placed directly upon the anus. When the time comes for removal, the outer sponge should be slipped out of its place and warm sweet-oil injected into the bowel to facilitate the withdrawal or escape of the tampon.

the danger possibly attending the removal of such a tumor. While on duty at La Charité, in 1856, he found a woman, over fifty, who complained of long continued pain and difficulty in defecation, from which she had suffered for years. She had severe dragging pains in the belly while straining, and reported that sometimes a mass of some size would be forced through the anus, which would go back after the stool. As high as the finger would reach, a soft, solid tumor could be just touched. One day when the tumor had come down, Broca, recognizing it as a polypus, determined to remove it, and, hesitating between the ligature and the *écraseur*, chose the latter, as likely to afford the most prompt relief. In forty-eight hours his patient was dead of peritonitis. On dissection of the body the polypus was found to have been attached to the walls of the sigmoid flexure at its middle portion, and the gut had been drawn down to the anus, so that the *écraseur* had taken a piece out of it, leaving a round hole. If a ligature had been used, consolidation of the parts might have taken place before the separation of the tumor, and thus prevented the faecal extravasation which caused death.*

This department of my subject would hardly be complete without a few words concerning *benign tumors of the anus and rectum, not included under the head of polypi*. Among these, warty growths, or papillomata, which, as we have seen, are closely allied to certain varieties of polypi, are by far the most frequent at and near the anus; and then, at increasingly rare intervals, we are liable to encounter fatty tumors, cysts, chondromata, and even dermoid cysts.

* *Traité des Tumeurs*, Paris, 1869, vol. ii, p. 536.

In view of their relation to epithelioma and also to certain cutaneous manifestations of syphilis, you will find an accurate knowledge of *papillomatous* growths very useful to you, for they are common in many localities. They are, simply, the result of hypertrophy of the histological elements of the skin, i. e., of the fibro-connective tissue forming the substance of the papilla, of the epithelium covering it externally, and of the capillary loop supplying it with blood—in other words, papillary hypertrophy. The neighboring skin-follicles also participate in the overgrowth, but the nervous element seems to be less developed. The most common cause of the affection is a certain constitutional predisposition to papillary hypertrophy brought into activity by the habitual contact of acrid or irritating substances with the sensitive integument, in localities where the cutaneous papillæ are most numerous; and the thinner and more delicate the skin, the more liable it is to take on the morbid process. Thus, the same causes act in causing warts on the hands of children, on the genitals in both sexes, and at the anus; and they vary as to being dry or moist, according to their locality.

There is no basis for the opinion that either syphilis or gonorrhœa gives rise to warty growths, or that they are, under any circumstances, communicable by contact. I have seen them in otherwise healthy children, in women free from disease, and in robust old men. The hypertrophied cutaneous follicles of a moist warty growth secrete copiously an acrid offensive fluid from between its overgrown papillæ, and the contact of this irritating fluid may provoke papillary hypertrophy in another person, but only as any other

irritant might produce the same effect—such as preputial, gonorrhœal, leucorrhœal discharge, or even confined perspiration.

Simple warts, growing into a papillomatous tumor, may attain very considerable dimensions. I once removed a mass weighing nearly a pound, and involving the labia majora, perinæum, and anus of an old prostitute in the adjoining hospital, and I have not unfrequently seen the penis converted into a mass the size of the fist. Even under these circumstances, the whole integument, from which the mass grows, is not necessarily involved, but the individual warts grow from it by slender stalks, while their free surfaces branch out in rapid development, and become matted together at their summits, presenting the appearance of a cauliflower, so that a moderate-sized growth may be snipped off, by careful manipulation, so as to leave a surface perforated by minute holes, oozing blood; but, in a large growth, it may be necessary to take away the whole of the skin to which the tumor is attached, and, in the case of the penis, I have seen it necessary to amputate the whole organ.

The histological anatomy of this morbid growth (papilloma) is very simple. Normally, there is a well-defined limit between the surface of the papilla and its investing epithelial layer. In papilloma this limitary line tends to become obliterated, the embryonic cells of the papillary substance increase in number, adding to the bulk of the papillæ on one side, and being developed into epithelium on the other. This "proliferating zone" is compared by Rindfleisch to the viscid secretion that exudes between the bark and sap-wood of a tree in the spring, out of which the

ring of new wood is made. In this manner the morbid growth increases in bulk, always by its surface.

My remarks, thus far, apply to all simple warty growths. They are hardly as frequent at the anus as elsewhere, although the common mistake of applying this designation to syphilitic mucous patches in this locality has seemed to sanction the opposite opinion. The irritating secretion from mucous patches near the anus may provoke the development of warts in their vicinity, and, when the patches are elevated above the level of the surrounding skin, as is very often the case, they may be themselves mistaken—with their soft, yellowish-white surfaces—for flattened masses of warts; but the contact of a probe will demonstrate that they lack the cauliflower-like structure, and, besides this, elevated mucous patches usually disappear promptly under the influence of cleanliness and anti-syphilitic remedies. The flattened gummatous masses developed near the anus, which Fournier describes under the title of *syphilome ano-rectale*, are still less likely to be mistaken for papillomata, for the integument covering them, in the cases I have seen, has been usually smooth and shiny and livid in color. Both of these syphilitic manifestations are often spoken of as *condylomata*—a term which is usually employed with no very precise meaning. As I have said before, I regard condylomata as nothing more than limited patches, or tabs, of hypertrophied skin, which have been the seat of inflammatory exudation; they differ from warts in involving the whole thickness of the skin, and not its papillary layer alone; and they belong to the category of external piles—demanding the same treatment. It is to be noted

that true condylomata are occasionally met with growing from the mucous membrane of the rectum within the anus, where they are liable to be mistaken for the multiple adenomatous growths I have already mentioned.* I have also seen well-marked epithelioma attack the verge of the anus as it does the lower lip, and present a modified warty surface; but the base of such a growth is always broad, and its general physiognomy not easily mistakable.

Warts at the anus rarely give much trouble, except when they grow largely. They often affect the groove between the buttocks. Those just at the verge are mostly dry. I have found them not unfrequently growing from the semi-mucous surface brought into view when the radiating wrinkles are unfolded by drawing the edges of the anus apart, and here, in sensitive persons, they are liable to be attended by unpleasant sensations, as of something to be voided, and especially by itching. I have thought that the necessity of wearing a napkin, and the contact of the menstrual secretion, rendered them more common in women; there is little doubt that the condition of pregnancy favors their appearance.

In regard to prognosis, warts generally disappear entirely under judicious treatment; in exceptional

* Within a few days. I have examined, with my friend Dr. L. A. Stimson, a woman of thirty-five, whom he had recently cut for fistula, and discovered at the same time a patch of little excrescences covering an area of a square inch, perhaps, situated above the upper limit of the cut, and about an inch from the anus. Some of these little excrescences were flattened laterally, and acuminated at their summits, and some were slightly pedunculated. One of them, which he cut off and subjected to microscopical examination, showed the histological characteristics I have ascribed to condylomata; it was simply a tab of hypertrophied mucous membrane, and showed neither disproportionately enlarged papillae nor tubular glands.

cases they crop out again, obstinately, after removal, and, more rarely, they develop an aggressive quality, and become epitheliomatous. When the latter takes place, nests of epithelial cells develop in the substance of the true skin and beneath it.

Traumatic irritation of existing warts, as by friction of contiguous parts—the buttocks, for example—may become excessive, and lead to ulceration of the outgrowths, attended by extreme sensibility of the surrounding skin. For this condition the best immediate palliatives are local tepid bathing, syringing or spraying with emollient and astringent washes; among the latter, lead-water, diluted aromatic wine, diluted tincture of thuja, or even alcohol—gradually increasing its strength—and, afterward, unirritating dessicative powders, such as bismuth, may be dusted over the parts when dried. For radical cure, absolute cleanliness, with a diligent use of astringent applications, will often succeed, especially with warty growths on moist surfaces. In obstinate cases, a continued and thorough application of the liquor ferri sub-sulphatis, or the accurate dusting of the dry powder of the sub-sulphate into all of the crevices on the surface of the growth, will generally arrest its progress, and leave a dark-brown crumbling surface. This should be brushed away, say with an ordinary nail-brush, and the solution or the dry powder reapplied daily, or even twice a day. The tendency of these preparations of iron to stain the linen must not be forgotten. They are better suited to the purpose than the old-fashioned remedy of equal parts of powdered savin and dried alum employed in the same way. These iron-salts—the sub-sulphates—are intensely astrin-

gent, but not escharotic, like the perchloride; they have seemed to me even to have the power of controlling local hyperæmia. Escharotics are less satisfactory; the milder ones, like acetic acid and tincture of iodine, have not sufficient power to control an active growth, and it is not easy to limit the effect of those which are more active. The tincture or fluid extract of the *thuja occidentalis*, applied frequently, and taken also internally, has a reputation in this city for controlling cutaneous overgrowths, even when they assume a bad character. If these remedies fail, the best resource, in most cases, is to anæsthetize the patient, snip off the pedicles of the growth, and touch each bleeding point with the thermo-cautery. This is readily accomplished by a little care in manipulation, and the little eschars thus produced not only arrest the bleeding at once, but they serve, without any addition, as a light and effective dressing, and, when they fall, leave smooth cicatrices. Cases of too long standing, or too extensive to be amenable to this method, are to be treated by the knife.

In regard to *fatty tumors*, which are very rare in this region, I have seen one, of the groin, which sent a prolongation down to the perinæum, and there is a case on record, in a riding-master, in which a lipoma took its origin in one of the ischio-rectal fossæ, and encroached upon the anal orifice, simulating a perinæal hernia.* Both were successfully removed by opera-

* Robert, *Annales de Therap.*, October, 1844. Mr. Spencer Wells presented a lobulated fatty tumor, weighing two pounds, at a meeting of the London Pathological Society (*Trans.*, vol. xvi, p. 277), which he had removed from the recto-vaginal septum, or, as he says elsewhere, from the recto-ischiatic fossa, in a young lady. It had completely closed the vagina. There was no difficulty in the operation, and the patient recovered well.

tion. There are, also, some recorded cases of lipomata developed, apparently, in the sub-mucous coat of the bowel, generally higher up than the rectum, which have assumed the peduncular character of polypi. In two of these cases, adults, the pedicles ruptured, and ovoid, lobulated, fatty masses, one of them nearly five inches long, were voided at stool, and the patients recovered.* In others the lipoma has given rise to intussusception of the bowel.† In case a fatty tumor should present itself to the surgeon in the guise of a polypus, it is well to remember, therefore, that its pedicle may possibly contain peritonæum, and also that it will vary from the usual appearance of fatty tumors, on section, in presenting a reddish-brown color internally, which is a peculiarity of the lipoma in this region.

Cysts in the neighborhood of the anus are mostly congenital, and when situated near the coccyx, and in the median line, there is always a possibility that there may be a communication with the cavity of the sheath of the spinal cord of the nature of spina bifida, which, you know, is a congenital deformity from arrest of

* Mollière, *op. cit.*, p. 525. The following case was reported to the Anatomical Society of Paris (*Bull. Soc. Anat.*, 1875, p. 195): "A woman of eighty-three had obstinate costiveness, and for two years had been unable to have a stool without an enema, complaining pretty constantly of colic pains and a sense of weight in the rectum. As nobody would examine her, she introduced her own finger, and felt a soft mass, not faecal, which, by repeated injections, she succeeded in voiding. It proved to have a slender pedicle, which had been torn across, was larger than a pigeon's egg, weighing about three hundred grains, and, on section, was found to be a lipoma, pure and simple. There was no bleeding at any time. She was relieved of her colics and costiveness."

† Esmarch speaks of a case of lipoma taking its origin in the sigmoid flexure, which led to invagination, and ultimately to a protrusion nearly four inches long. The tumor was removed and the invagination overcome by forced injections of water. (*Op. cit.*, p. 154.)

development. Exploratory puncture is proper, and the nature of the fluid contents of the cyst may determine the question. The presence or absence of fluctuation or impulse between the tumor and the fontanelles in an infant would also aid in diagnosis. If no connection can be made out, a cyst in this neighborhood may be treated, as elsewhere, by injection or extirpation. Such a tumor has invaded the ischio-rectal fossa so as to press upon the rectum. A cyst might also be mistaken for a soft cancerous tumor (sarcoma). Cases of the latter are on record as having occurred congenitally, and as having been even successfully removed.* There are also four or five recorded cases of "dermoid cyst," in or near the rectal walls, and within reach of the anus, containing teeth and hairs. In one of them†—a young woman of twenty-five—some hairs projected externally from the anus. This tumor was removed, and death followed, according to the report, in consequence of perforation of the peritonæum.

A cartilaginous tumor interfering with the functions of the rectum is of rare occurrence. I have seen but one instance in which the diagnosis seemed justifiable. A clergyman was sent to me from Pittsburgh some years ago for obstinate constipation,

* See analysis of Molk's Strasbourg thesis *On Congenital Tumors of the Lower Part of the Trunk* (in Mollière, *op. cit.*, p. 531). Hyrtl also speaks of small steatomatous cysts, the size of a large pea, developed near the anus. There is a case of pelvic hydatid tumors simulating hæmatocele, in which the woman was "delivered of serpent's eggs," and died in collapse, in the *Annales de Gynécologie*, February, 1878. The author has collected twelve other cases of hydatid tumors of the pelvis. As these tumors might readily interrupt the functions of the rectum by their pressure, and, as they are both recognizable and curable, it is well that the possibility of their occurrence should be kept in mind.

† Danzell, *Archiv für klin. Chirurg.*, 1874 or 1875.

which had led gradually to entire stoppage on several occasions, and the intervals of the attacks were decreasing. I discovered a hard elastic tumor, firmly attached to the wall of the pelvis, which seemed, to Dr. Erskine Mason and Dr. Keyes, who also examined the case, as well as to me, to be the cause of the obstruction, and to be probably chondromatous in character. The urgency of the symptoms and their steady persistence and increase justified the recommendation of colotomy, in my judgment, and the patient was anxious for it, so convinced was he of the imminent danger of entire obstruction. During the following six weeks his stools became somewhat more free, and the improvement continued so marked that the idea of the operation was abandoned. I concluded that the tumor had changed the direction of its growth, more upward, and out of the lower pelvis; and this was the only explanation of the improvement in his condition.

Malposition of the uterus, retro-uterine hæmatocele, and also the consequences of pelvic cellulitis are each liable to interfere with the functions of the rectum by causing pressure from without, and should, therefore, always be kept in view, as these affections may simulate stricture as well as tumors of the rectum.

LECTURE V.

ABSCESS.

I ASK your attention, in the next place, to *abscess* at or near the lower end of the bowel. In this region, abscess is usually a very painful affection, and often grave in its consequences, and it also commands our especial attention because it plays so important a part in the pathology of *fistula in ano*, which takes its origin, in most cases, in abscesses which have failed to heal. A knowledge of the causes of abscess in this region and of the obstacles which may interfere with their prompt cure has, therefore, a double interest for us, for it bears directly upon the preventive treatment of fistula.

Abscesses at the anus, as met with in practice, may be classified in three rather distinct varieties, mainly according to their locality: 1, what the French call "marginal abscesses," situated immediately at the orifice; 2, abscesses taking their origin in the ischio-rectal fossæ; and 3, those which form in the loose connective tissue around the rectum, but higher up than the latter, above the *levator ani* muscle, in what Richet has called "the superior pelvi-rectal space." Their frequency and degree of gravity are both indicated by the order in which I have placed them.

Marginal abscesses are very common. They originate from violence inflicted upon the delicate tissues of the orifice, almost always in straining to evacuate a costive stool. These tissues are, in most cases, already in an unnatural and weakened condition, as a result of the frequent repetition of the same kind of violence, and this favors the rupture of some fibers of altered tissue, or of a minute blood-vessel, which injury serves as the starting-point of local suppuration. The tabs and folds of integument, so commonly found at the margin of the anus, give evidence of frequent overstretching, and explain the loss of healthy tone which invites the pus formation. These abnormal tabs are what I have already described as constituting one of the varieties of external piles, and accordingly it happens, perhaps in most cases, that the marginal abscess is developed in an external pile. This explains the term "tuberosus," applied to certain abscesses of this class in consequence of their spherical shape.* Often a little round lump will form just at the verge of the orifice, taking its origin from a hard stool, or an external pile, or the chafing of the napkin of a menstruating woman, or from scratching to relieve itching, or the perspiration and chafing of a long walk. It becomes hot and exceedingly sensitive, and for three or four days, or until it bursts, there is little rest to be had. The

* The following case (from Howship, *Practical Observations on Surgery and Morbid Anatomy*, London, 1816, p. 310) illustrates a very common mode of approach of marginal abscess: "A woman applied because of a painful swelling at the verge of the anus. On examination, this proved to be a single tumor; the skin covering it was irritable, shining, and livid. She attributed it to a costive stool four days before. It was opened by the lancet, and, the distended skin collapsing, the little coagulum of blood, equal to about a drachm, was readily turned out, and the parts were immediately relieved."

locality is one of the most sensitive in the body, and the incessant contractions of the muscular fibers of the powerful external sphincter are constantly pinching the painful point; the muscle is, in fact, excited to more active contractility by its presence.

If free greasing with vaseline to prevent friction does not give relief, or if abortion can not be effected in twenty-four hours by a pig's bladder partially filled with ice and molded accurately to the part, then the tumor should be freely incised. Freezing with ice or ether spray might replace general anæsthesia; afterward, a piece of fine sponge, cut to fit the part, and moistened with laudanum or compound tincture of benzoin, may be kept in contact with it. This will generally cut short the attack. Not always, however; for in young men of irritable habit, who drink and smoke to excess, there is not rarely a continued painful sensitiveness of the part, with slow healing, requiring rest and patience. When the application of ice causes aching, it is proper to substitute for it a soft, warm poultice, with laudanum, and in any case to keep quiet. It is possible that the little swelling may subside and disappear under the milder treatment; but it is an exception to the rule for a marginal abscess to abort. Suppuration is the usual result, and, on the whole, early opening is the best and most reliable remedy. Some of these little anal abscesses, like those of the eyelids (*hordeoli*), originate in glandular follicles, and cause an amount of pain out of all proportion with their size. They occur more frequently before middle life, and in some individuals show a tendency to habitual recurrence. The regular use of an astringent or alcoholic lotion to

harden the skin is often of service in such cases as a preventive.

Another form of marginal abscess undoubtedly takes its origin in a little varicose venous pouch—one of the remaining varieties of the external hæmorrhoid; this, when left to itself, is likely to leave behind it a minute “blind external fistula,” often associated with a little flap of shriveled integument.

It is only in persons of a scrofulous habit that you will encounter a marginal abscess which has formed without pain. Like the “dermoid abscesses” of strumous children, these minute cold abscesses are characterized from the first by want of reparative action. A marginal abscess of this sub-variety may present itself without any warning in the way of unusual sensibility of the part, and the lack of power will be found to be the principal obstacle in getting it to heal. Injections of absolute alcohol and of tincture of iodine have proved useful in these cases. Small fistulæ, doubtless, also form in this way in tuberculous subjects without their knowledge; and, when they come under treatment at a later period for pulmonary disease, the existence of the little fistula is probably unnoticed. This failure of recognition of the smaller trouble in presence of the greater is the only explanation of the statements, by Andral and other French authorities on phthisis, that the coexistence of fistula with this disease is rare. In more advanced stages of the pulmonary affection, when the concussion from constant cough has aggravated the fistula and led to pain in it, the surgeon is more likely to be consulted, and, if well trained, he at once recognizes the disease of the lungs. Hence, the discrepancy in the evidence

of hospital physicians and surgeons as to the frequency of the coexistence of the two affections. The rule is, however, that marginal abscesses cause a good deal of pain and distress.

The second variety of abscess near the anus takes its origin in the loose web of connective tissue and fat which surrounds the pouch of the rectum to provide for its varying volume, and develops itself in one of the two angular cavities between the rectum and levatores ani and the bony walls of the pelvis formed here by the ischium on either side, and known as the ischio-rectal fossæ. Ischio-rectal abscesses are slower in their development and more serious in their character than the class just described. Generally the result of violence, as of direct contusion from without, or from over-distention of the rectal pouch, and sometimes from actual perforation of its walls by fish-bones or other bony spicula, or hard substances swallowed with the food, they also seem to take place spontaneously in many cases as a consequence of vitiated blood and a depressed condition of the vital powers. In individuals who habitually deprive themselves of the amount of muscular exercise in the open air necessary for health, and who gratify their appetites at the same time to the full extent that Nature permits, the blood becomes loaded with material destined for the nutrition of the muscular system which forms so large a proportion of the bulk of our bodies. This material, not worked off by muscular exercise in accordance with Nature's intention, renders the blood unfit for the healthy nutrition of the other organs of the body, and clogs the emunctories in vain endeavors to get rid of it. We see it in the excess of matter with which the urine is

often loaded, and in the perverted character of other excretions. An organism thus encumbered and oppressed in its normal functions, although otherwise healthy, is liable to become a prey to disease on slight provocation; to explode with a carbuncle, an erysipelas, or an abscess in the loose tissues around the lower end of the rectum. This is what I mean by "vitiating blood and consequent depression of the vital powers." In a faulty constitution, of course, the liability to disease from trivial causes is greater; but, otherwise than in this way, I am not aware that a person of tubercular diathesis or one predisposed to consumption is more liable to abscess of this kind than another. Women, in my experience, are less frequently the subjects of abscess in this region than men, as they are also of carbuncle and some other affections of this class, such as phlegmonous erysipelas. It is proper to remark here that there are cases in which ischio-rectal abscess tends to become diffused, with rapid and extensive death of connective tissue; but early self-limitation is the rule. Bushe makes a distinct class of these exceptional cases under the title of "gangrenous abscesses."

It is clinically true that an ischio-rectal abscess is often the outcome of a temporary failure of health from faulty conditions of life in an otherwise well-nourished or even robust person. Having been "out of health," "a little run down," or simply overworked and then subjected to some exciting cause of disease in the way of local injury—perhaps only hard straining at stool—are circumstances which patients frequently recall when we inquire into the antecedents of this complaint.

An overworked practitioner was summoned to the country to a case of stone; he was driven from the station five or six miles to the patient's house in a very hard-seated wagon, in the cold, and severely jolted. Within ten days an abscess developed near the anus, the opening of which was long delayed, and it resulted in a grave and complicated fistula requiring for its cure an operation of unusual extent and severity.

A very busily employed executive officer in a heavy financial institution, sitting all day, and living a little too well at home, was a victim of one of the most extensive abscesses of this sort I ever saw. His health had always been excellent, and he was in the prime of life, but the abscess, which formed in mid-winter, proved to be the cause of his death. Its formation and progress were insidious and slow, and its opening was long deferred, and then not made sufficiently free, and, when I saw him in consultation, there was an extensive cavity extending nearly around the circumference of the bowel, and he was suffering from hectic fever, which, as you know, is good evidence that the vital powers of a patient are unequal to the repair of his disease. We succeeded, however, in improving his condition by means which I will detail later, so that he could have undertaken a sea voyage with a good prospect of ultimate cure; but he refused to abandon his business, and died, exhausted, during the subsequent midsummer heats. I do not think that these cases will give you an exaggerated idea of the gravity of ischio-rectal abscess, especially when it is the result of "vitiating blood and consequent depression of the vital powers."

In persons of weak constitution, as in tuberculous subjects, where the fatty cushions of the ischio-rectal spaces are absorbed through emaciation, their unsupported blood-vessels are liable to rupture from the frequently recurring concussions that attend a severe cough; and in cases originating in this way the power of repair is often seriously wanting, so that the fistulæ which result are more extensive, and less hopeful as to ultimate cure.

The books speak of the abscesses arising from constitutional causes, such as those just described, as "idiopathic"—a term which, in this connection, has so vague a meaning that it is better dropped; but the conversely employed term, "traumatic," is correctly applied to many cases of this kind, for they often take their origin in violence: e. g., from over-distention of the pouch of the rectum by fæces, often dry, hard, and irritating, and competent to occasion ulceration of the mucous membrane; sometimes in actual perforation of its walls by hard substances swallowed with the food, as already mentioned. In operating for fistula, I once encountered a sharp fragment of chicken-bone lodged deeply in the sinus I was about to lay open; and many similar cases are recorded.* Ischio-rectal abscesses thus caused by ulceration and perforation of the walls of the gut have been called "stercoral" abscesses, because they contain extravasated fæces, and it is a good designation for this sub-

* Dr. Cummings, of Louisville, tells me that he met with a still larger fragment of a wooden skewer under similar circumstances. Professor Agnew, of Philadelphia, found two grains of Indian corn in the loose connective tissue just without the rectum, and Brodie mentions the pelvis of a snipe and an apple-core among the foreign substances escaped from the rectum and causing abscess.

variety; they are often serious from their extent, and deserve especial study. Ribes, a great French authority on fistula in ano, who earned his reputation by examining, in a series of years, no less than eighty dead bodies in which this disease was present in addition to the immediate cause of death, arrived at the conclusion that stercoral abscess originating in perforation of the rectum alone causes fistulæ.* Brodie, also, held the opinion that fistula *always* takes its origin in a perforating ulcer.† Syme and many others have opposed this doctrine, and the weight of recorded opinion is against it. But we owe to Ribes the demonstration of the fact, now undisputed, that the rectal orifice of a fistula is almost always to be found at or just above the upper limit of the sphincter—say, a short inch from the verge of the anus, which is the locality at which internal piles are seated. It is also a recognized fact that fistula, as a rule, takes its origin in an abscess which opens externally. It follows, therefore, that the abscesses which result in fistulæ usually take their starting-point in the region occupied by internal piles; and it is not unlikely that the initial lesion is the rupture of an enlarged vein on the surface of a hæmorrhoidal tumor while straining at stool, and the impaction of fæcal matter in the little wound thus produced—just as Ribes asserts. The resulting abscess would be “stercoral”;

* “After carefully examining the condition of the parts in a very large number of dead bodies, which passed through my hands during the twenty-seven years between 1799 and 1826, I found more than eighty with fistula in ano, who had died of other diseases.” (*Mémoire sur la Situation de l’Orifice interne de la Fistule à l’Anus et sur le Trajet que parcourt ordinairement cet Ulcère, etc.*, par le Dr. F. Ribes, *Mém. de la Soc. d’Emulation de Paris*, t. ix, p. 85.)

† London *Lancet*, Jan. 27, 1844, p. 551.

and it might either traverse the sphincter muscle in its route toward the surface or invade the ischio-rectal fossa.*

Traumatism undoubtedly accounts largely, if not entirely, for the formation of abscesses in this region, and, therefore, also, of fistula. You will observe that the term *traumatism* includes injury to tissue resulting from deterioration in quality by malnutrition, injury amounting even to actual death of tissue in minute or even larger masses, from insignificant or hardly perceptible causes, as well as the more obvious lesions that we usually call wounds. Of all these lesions, which serve as points of origin for abscess, perhaps the most common is the rupture of a small blood-vessel. In this way, by actual lesion of tissue, modern pathology explains the terms "idiopathic" and "critical," formerly applied to abscesses of which the causes were not clear.†

* In justice to Ribes, whose conscientious and protracted investigation of this subject is worthy of all admiration, it should be noted that he explained the fact, which he was the first to recognize, as to the usual seat of the internal orifice in fistula, by the theory I have set forth. His conclusion has been received by the profession, and confirmed by experience; but the premises on which he based his opinion have received less attention. In fact, this mode of origin of fistula and the arrest and impaction of irritating matters in the lacunæ of the rectum situated at the same locality, which Physick considered as a not infrequent seat of ulceration from the same cause, comprise, according to Ribes, the whole etiology of fistulæ, except in very rare cases. This view of the causation of abscesses was based upon Ribes's patient study of appearances as found in the dead body, and it should not be lost sight of. It has a basis in the normal structure and morbid anatomy of the part.

† *Case*.—A man applied for relief at St. George's Infirmary, complaining that he had been seized by a pain near the left side of the anus nine days before, while straining at stool, and that the part was now hot and tender. A fluid was felt, on examination, underneath the skin near the verge of the anus. It was opened with a lancet, and nearly an ounce of blood let out. The cavity suppurated, granulated, and was healed in three weeks. (Howship, *ut supra*.)

Ribes's theory of the traumatic origin, in rupture of a hæmorrhoidal venous pouch, of stercoral abscess, explains why we so often find the subsequent fistulous track pursuing a tortuous course among the muscular fibers of the sphincters. These abscesses, taking their source in an effort to eliminate the fæcal matter forced into such a crack or rupture on the surface of an internal hæmorrhoid, are no doubt often developed in the substance of this muscular mass; so that in certain cases the pus formation may not actually invade the ischio-rectal fossa. We have here, therefore, another sub-variety in the category of abscesses near the anus.

Among the causes of abscess in this locality, we must not overlook the presence of stricture of the rectum. This malady, in a large proportion of cases, is complicated at some period of its course by pus formation in its immediate neighborhood. Hence it is not uncommon to meet with fistula in connection with stricture. Syme mentions a case of fistula, brought into the amphitheatre of the hospital for.

The following case from Ribes's memoir is given as an example of what was in his day called a "critical abscess," for he so designates it:

"A full-blooded man of sixty, with distended superficial vessels on the skin of his face, was out of condition and feverish, with some œdema of the ankles, when a large abscess developed itself at one side of the anus, as a hard, painful, purplish-red swelling. It was opened early by a free incision, and gave issue to much black blood, mixed with a little pus. The rectum was bare, but no communication with its cavity could be discovered. The chasm filled up very slowly, and more than three weeks elapsed before it was finally closed. There was no fistula." (*Ut supra*, p. 121.)

In this sexagenarian, with thin-walled blood-vessels and a faulty condition of blood from some defect in his personal habits or environment, the amount of "black blood" contained in the abscess suggests that its cause was extravasation from rupture of a vein—an accident which, in the blood-vessels within the cranium, would have been called apoplexy. But the term "critical" conveys no idea of its pathogeny.

operation, in which the surgeon, on introducing his finger to feel for the inner opening of the fistula, discovered a tight stricture hardly two inches from the anus.

The reason why abscesses form in connection with stricture is not very clear. It would seem likely that over-distention of the gut immediately above a stricture might occasion ulceration and perforation, causing fæcal escape, and, in fact, stercoral abscesses do occasionally form in this way. It is suggestive of a conservative effort to create a new route by which the fæces may be voided in case of complete obstruction, as in perinæal abscess from stricture of the urethra, and there are cases on record in which life has been prolonged by the formation in this manner of a new avenue of escape.* But, in the large majority of cases of fistula complicating stricture, the opening of the fistula into the bowel is *below the seat of the stricture*, and the abscess of origin does not occur in the manner just indicated. The French explain the pathology of this latter class of abscesses, which are less extensive and dangerous and not "stercoral," by the term "*abcès de voisinage*"—abscess of proximity—as

* Tanchou (*Gaz. Méd. de Paris*, September 28, 1833) relates the case of a self-willed lady with a benign stricture of the rectum, who would not submit to treatment, in whom an enormous stercoral abscess formed on the buttock, and resulted, after intense suffering and great danger to life, in the formation of an extensive fistulous passage through which the fæces were regularly discharged, and she regained her usual health. Subsequently, a second abscess formed, nearer to the rectum, which went through the same course, and after this the first fistula closed, the last-formed track affording passage to the fæces.

A remarkable case is mentioned by Robert (*Am. Jour. Med. Sciences*, April, 1850, from *Gaz. des Hôpitaux*, June 19, 1849), in which a perforation above a stricture of the rectum gave rise to a stercoral abscess, which burrowed out of the pelvis through the sciatic notch, traveled down the back of the thigh, and finally opened in the popliteal space.

suming that an abscess occurs near a stricture for the same reason that it forms so frequently near a diseased joint, or any other focus of irritation. But the adoption of a generality like this simply defers the real difficulty of the explanation: this is, probably, that a local impairment of textural vitality from interrupted nutrition takes place (a consequence of obstructed local circulation), which results in blocking up of capillaries (thrombosis), or their rupture (extravasation), or possibly in limited textural necrosis; and the pus formation is an effort to get rid of dead matter, i. e., of extravasated blood, or of a minute slough. A similar explanation accounts for the occurrence of the abscesses which so often complicate the course of existing fistulæ in ano, and in many cases occasion new openings. But here we must also keep in view the frequent liability to temporary obstruction in the track of the fistula or at its outlet, which is commonly followed by pain, heat, redness, and swelling, and the discharge after a time of accumulated pus, sometimes indeed through a new orifice. These are the new abscesses which are always to be anticipated in fistula, and which justify a resort to curative operation.

We must not lose sight of the facts that chronic abscess of remote origin in necrosis of bone and psoas abscess sometimes gravitate to this region and point near the anus, and that the vicinity of an enlarged prostate or a diseased bladder or seminal vesicles may cause perineal abscess, and encroach upon the rectum. I have punctured an abscess seated between the prostatic urethra and rectum, and projecting into the latter, to relieve retention of urine;

and Gooch relates the case of an old gentleman long subject to gravel who, after a perinæal abscess and much subsequent complaint of pain at the anus, was found, on examination (which had been unwisely deferred), with a urinary calculus of a slender, tapering shape, and over an inch long, projecting more than a third of its length into the rectum. Its removal was followed by cure. (*Chirurg. Works*, London, 1792, vol. iii, p. 216.)

I am disposed to emphasize the subject of etiology, because the more thoroughly we grasp the causes of disease the greater the chances of success by hygienic and preventive measures, and the more direct and rational our treatment.

Symptoms.—As regards the *symptoms* of the class of abscesses we are now considering, it is noticeable that, when the focus of pus formation is situated farther from the verge of the anus and beyond the grip of the sphincter, the pain, even in the acutest grade of abscess, although from its greater size very considerable, is neither so constant nor so intolerable as in the first class. There is more or less extensive redness of the skin, followed by central softening, and accompanied by febrile reaction.

Absolute rest (with narcotic and sedative poultices) and an early and free opening are the remedies. An abscess, if not promptly treated, might linger a fortnight or longer. One of its prominent difficulties is to provide for defecation without great temporary increase of pain. It is better that this should be done every other day, or even daily, than to run the risk of faecal accumulation and its consequences, which might interfere with subsequent prompt repair. The

best means to use for this purpose are a moderate dose of some mild reliable laxative, such as castor-oil, sulphur and cream of tartar, or fluid extract of buckthorn, assisted, at the right moment, by an enema of warm water and sweet-oil. The introduction of the nozzle of the injecting tube is not painful under these circumstances, if rightly managed; and it is usually wise to overrule the objections of a patient who has no experience of this remedy. The obstruction to the local circulation from a loaded rectum constitutes a positive aggravation of the malady.

As to the more common form of acute abscess near the anus, when left to itself, the complete relief from pain that follows spontaneous discharge leads the patient to dismiss the trouble from his mind and consider himself cured. It is only some weeks later that the fact forces itself upon his attention, in consequence of finding his clothing more or less constantly soiled by a watery and perhaps offensive discharge, that a fistula has formed.

It happens, occasionally, that a collection of pus forms outside of the rectum, in most cases just on a level with the upper limit of the sphincter, and, failing to reach the surface externally, and in most cases causing no very urgent pain, finally discharges itself into the bowel, so that the patient, after voiding some matter at stool, finds himself relieved. It is in this manner that what is called the "blind internal fistula" forms—a variety of fistula which is not very common. The relief, however, in a case like this, is not usually permanent; a hard lump remains somewhere on the buttock, near the anus, and continues somewhat tender on external pressure; sooner or later it

becomes the seat of another abscess, which may break externally; and thus, the complete process of repair failing, the "blind internal fistula" is converted into a "complete fistula."

In both this and the last variety of abscess, the exciting cause, as I have endeavored to show, is in most cases a perforating ulcer at the bottom of one of the lacunæ of the rectum, which are situated just above the external sphincter, the ulceration having been provoked by the lodgment in the little pocket of some source of irritation derived from the passing fæces, or an ulcer following the rupture of an enlarged vein on the surface of an internal pile, as already indicated. Hence, when a complete fistula follows, its internal opening is found most frequently just above the upper limit of the external sphincter. Not rarely, the starting-point of the abscess is in the substance of this muscle, so that the resulting fistula actually traverses the muscular mass. When the abscess extends entirely outside of the sphincter muscle, it then occupies the ischio-rectal fossa, and, in the loose connective tissue and fat of this region provided to accommodate the varying bulk of the rectal pouch, finds room for rapid development.

That is a much more grave form of rectal abscess which takes its origin, at first, deep in the ischio-rectal fossa. It is caused in some cases, doubtless, by ulcerative perforation of the rectal pouch; in others, as a direct result of constitutional dyscrasia. The progress of these cases is often slow, insidious, and depressing, because the pus tends to travel inward, in the direction of least resistance, rather than toward the surface. The dense integument and subcutaneous

cushion of the buttock become thickened and brawny, often over a considerable extent of surface. There is not, necessarily, any very urgent pain or throbbing; but fever is present, and frequently there are evidences of septicæmic depression. When the surgeon is not familiar with these cases, and waits for evidences of fluctuation before interfering, extensive destruction of pelvic connective tissue may occur, involving danger to life. A finger in the rectum will recognize increased heat and an cedematous, doughy feel. The indications are those of phlegmonous erysipelas; the surgeon should make an early and free opening with the knife through the integument, and follow it with his finger, so as to secure a direct and sufficient outlet not only for pus but for sloughy *débris*. This affords the only assurance of safety. When it is neglected, extensive surface ulceration and sloughing are liable to follow, with an amount of destruction of pelvic connective tissue around the lower end of the gut which is often irreparable; and, where the patient does recover, he is liable to permanent disability.

There is, plainly, a wide interval between the little, round, painful abscess of the margin of the anus and the grave forms of disease just described, and in practice we encounter many varieties of abscess intermediate with these which I have brought forward as typical examples; but it is worthy of being always borne in mind that the same rule of treatment is imperative in all abscesses near the anus or rectum, viz., to open early and freely, with the double object of shortening the period of pain and tissue destruction, and of securing a cure, if possible, without fistula.

Troublesome bleeding from opening these abscess-

es rarely occurs. Pressure applied in the usual method, by compresses and a T bandage or strips of adhesive plaster, is always available, but I prefer the sub-sulphate of iron, used either in solution or as a dry powder. I have found this substance entirely efficient as a hæmostatic, and it makes a good dressing, possessing no irritating or escharotic properties, but, on the contrary, being an excellent disinfectant, and a salutary local stimulant. It forms a scab under which healing goes on without pus formation. I have filled the cavity of an abscess with the dry powder, blowing it in through a tube, after the manner recommended by Marcus Aurelius Severinus for his famous "catagmatic powder," with excellent effect. There is no reason, therefore, why the abscess should not be opened so freely as to render any subsequent retention of pus impossible, and this is the condition on which prompt healing and escape from the formation of a fistula depend. I have little doubt, after the results I have seen from the antiseptic method, that, if it were faithfully used in opening and dressing these abscesses, and accurate drainage secured by means of caoutchouc tubes or horse-hair, healing without fistula would be the rule instead of the rare exception, as at present. The striking success of Volkmann, as set forth in his recently published operations upon the rectum, certainly justifies this hope. But, even with the aid of antisepsis in insuring prompt repair, early and free opening can not be dispensed with.

Abscesses of the third class, which form higher up in the true pelvis than the ischio-rectal fossa, are comparatively rare, and our knowledge of them is both recent and valuable. The cavity beside the rec-

tum, familiarly known as the *ischio-rectal fossa*, was first accurately described, and this name given to it, by Velpeau, in 1829. In 1856 Richet first pointed out and formally described a region lying beside the rectum, but *above* the ischio-rectal fossa, and separated from it by the levator ani muscle and the fasciæ which line its surfaces. This musculo-membranous diaphragm forms at the same time the roof of the old fossa and the floor of the newly described space which, in fact, lies between it and the parietal aspect of the peritonæum as the latter is reflected from the walls of the pelvis over the rectum and bladder. In the loose connective tissue which occupies this "*superior pelvi-rectal space*," as Richet has named it, abscess occasionally forms.*

The symptoms which accompany the formation of an abscess in this region are obscure, and its progress slow, in consequence of the difficulty with which the pus finds an outlet. The musculo-membranous layer of the levator is not easy to penetrate. Ultimately the pus discharges, either by ulcerating into the rectum—high up, of course—or by working backward through a partial opening which exists normally in the median line near the sacrum. It now escapes from the pelvis through the upper sacro-sciatic opening or gravitates downward beside the rectum, and points externally near the anus, constituting a variety of fistula which requires a special treatment for its cure, and this we shall consider hereafter. The flow of pus from such a fistula is often intermittent, and is likely to be increased at the time of stool by the passage of the fæcal mass through the rectum.

* *Traité pratique d'Anat. Méd.-chirurg.*, fourth ed., Paris, 1873, first part, p. 93.

The route by which the pus of an abscess of the upper pelvi-rectal space escapes is the same which is followed by an abscess taking its origin near the vertebral bodies, when it makes an opening near the anus, simulating fistula in ano.

These, then, are examples of abscesses in this region which we can not open early, simply because we can not reach them with any certainty, even if accurately diagnosticated. I could not have completed the subject of the present lecture nor the etiology of fistula without mentioning them.*

There is a rare variety of abscess that forms *in the walls of the rectum* from violence, as by over-distention, or that is caused by the presence of foreign bodies in the rectum. The absence of resistance to distention in this locality prevents much pain during its formation, and I have known the voiding of pus at stool to be the first serious intimation of its existence. Heat and swelling could be detected deep in the rectum by the finger; and any complaint of uneasy sensation in this region, however vague, if persistent, should be met by such an examination.

It may be observed, finally, of all the various forms of abscess near the lower end of the rectum, that they have certain characteristic features in common, viz.:

* Some years ago I watched with much interest the case of an eminent lawyer, who ultimately died exhausted from the effects of what I afterward recognized as an abscess of the upper pelvi-rectal space. He was of delicate constitution, but not manifestly tubercular. The disease appeared at fifty-five, after failure of the general health from over-work. Pus presented at the sacro-sciatic foramen, where I gave it vent, and the sinus, which communicated with the interior of the pelvis, never healed. Another abscess formed later, in the buttock. The functions of the pelvic viscera were not seriously deranged. There was no evidence of dead bone.

1. They can be rarely made to abort, going on almost inevitably to suppuration.

2. They do not heal readily, but, as a rule, tend to degenerate into chronic sinuses and fistulæ.

3. The pus which they discharge is offensive in odor, in consequence of the exosmosis of gases from the bowel.

Little remains to be said concerning the *symptoms* of abscess, except as bearing upon early *diagnosis*, the importance of which is obvious in view of the necessity of an early opening—the cardinal point of treatment. In the *acute* forms of the disease, there is little difficulty in recognizing the impending pus formation; but, in what some authors style the “chronic” abscess of this region, where perforation of the rectum has occurred and the pus formed external to its walls is slow in reaching the surface of the buttock or perinæum, which becomes thickened and brawny but shows no points of positive fluctuation, a certain amount of surgical tact is required to grasp the urgent necessity for immediate and ample incision. These are cases in which the knife is especially demanded to prevent burrowing and, possibly, extensive death of tissue; the lack of tension of the integuments that misleads is due to partial discharge by the rectal opening and to the yielding of the rectal walls. There is a certain analogy between them and cases of urinary extravasation, where free and prompt incision is the rule. It is well, therefore, to remember that the symptoms of fluctuation may be absent, and that there may still be an urgent necessity for the knife.

There are few affections in which the *prognosis* so largely depends upon treatment as in this we are

studying. Destruction of tissue of sufficient extent to place life in danger rarely occurs, except where the knife has been wrongly withheld; and the failure in ultimate healing that ends in fistula is very generally due to defective after-treatment.

What are the chances of cure, without fistula, of abscess near the rectum or anus? Allingham's table (*Diseases of Rectum*, London, 1873, p. 19) of 4,000 consecutive cases of rectal disease, observed at St. Mark's Hospital (out-patients), includes 196 abscesses, with the remark added that, "of these, 151 became fistulæ, and the rest were probably cured." This would give nearly twenty-three per cent., or about one in four, which I should consider somewhat too favorable a prognosis. It remains for us to improve the chances of cure by our methods of treatment.

Most of the essential features of *treatment* have been already described while speaking of the various forms of abscess, and I have only to emphasize the more important details. From what I have said thus far, you will readily understand, I think, why it is a received rule of surgical practice that *these abscesses should always be opened, and opened early*, even without waiting for unequivocal evidences of fluctuation. It is another good rule, to which, however, there are exceptions, that *all incisions for this purpose should radiate from the anus as a center*; we thus avoid cutting across the general course of blood-vessels, and we escape, also, possible bad effects of subsequent contraction in healing.

This affection is a very common one in practice, and its locality so often deters patients from asking advice until driven by stress of pain—and this is

especially true of women—that the well-posted practitioner will often find himself justified in responding promptly to the first complaint of a sufferer, “Take a little ether and let me examine you; I may not only relieve you now, but save you much trouble hereafter.” There is no class of cases in which anæsthesia adds so largely to our power as in this, and in the surgery of the rectum throughout; and here, in this country, where it was first discovered, the duty would seem to devolve upon us to demonstrate its utility in every-day surgery, for abroad, and especially on the Continent, the tendency is very strong to continue in the beaten track, and reserve it for the greater operations.

The question is often raised, in view of the frequency with which fistula follows abscess, “Why not, when opening the abscess, seek out a communication with the rectum and operate at once as for fistula, by dividing all the intervening tissues, and laying open the abscess directly into the gut?” The proposition has a certain attractiveness, but the practice has proved disadvantageous. The double wound has not healed well, apparently because the parts, already gorged with blood and exhausted by the pus-making effort, do not lend themselves readily to the simple process of repair. I would advise you, therefore, to secure healing of the abscess, if possible, and, if you fail in this, undertake later the cure of the fistula.

It is proper, in connection with treatment, to study the causes which delay healing in these abscesses. Why should an abscess near the anus, after it has floated out the foreign or dead matter which provoked its formation, so commonly hesitate to heal?

Abscesses elsewhere, as a rule, get well after discharging their contents. Why are abscesses near the anus so often exceptions to this rule? I would answer that the ceaseless motion kept up by the restless sphincter muscles and the constantly varying volume of the rectum necessitated by its function are the most obvious impediments to healing. The bad influence of this want of rest is proved by the frequency with which abscess is followed by sinus in the groin, axilla,¹ and behind the female breast—wherever, in short, there is much mobility of parts and much loose connective tissue. The analogy between the ischio-rectal fossa and the axilla is obvious. Another cause of delay in healing is destruction of tissue by neglect as to opening these abscesses early—much time being usually lost in vain efforts to “put them back” and in waiting for fluctuation. The rapid increase in the size of an abscess after pus has once formed and the certainty of greater destruction of tissue by burrowing render delay in the use of the knife a very common cause of fistula.* Other causes

* The following case from Cruveilhier shows that he favored the practice of early opening; and, also, that an unpromising-looking case may nevertheless get well without fistula:

“I was called in consultation to see a merchant in the Rue St. Denis, who had been suffering for three days with excruciating pain at the anus, and found a very hard inflammatory swelling of considerable size extending from the anus toward the perinæum. The opening of the swelling by the knife was put off till the evening of the next day—and for this error in practice I was not responsible. By this time we found an enormous increase in the swelling, with a good deal of elastic tension. Professor August Bérard made a free incision, giving vent to a quantity of gas and horribly fetid pus. This patient got well without any fistula—a pretty positive proof that there had been no communication between the abscess and the cavity of the rectum. The presence of the putrid gases was evidently the result of decomposition of the inflamed cellular tissue, which had fallen into gangrene.” (*Traité d'Anatomie pathologique générale*, vol. ii, p. 620.)

are: an insufficient or badly placed opening, which does not permit the abscess to discharge its contents entirely and freely and to contract at once, so that its walls may come together and remain in contact, which is a necessary condition for the healing of an abscess; stuffing its cavity too officiously with lint, and dressing it daily to make it heal from the bottom, whereas healing is in this manner often prevented; and neglect to keep the bowels quiet, or acting only in the gentlest manner, after opening an abscess. Among local causes of failure I may mention the depending position of the anal region, its defective drainage in consequence of a varicose condition of the hæmorrhoidal veins, and other impediments to free circulation, among which the sitting position is to be remembered. To secure all the chances of escaping a fistula after an abscess in this region, the patient should keep his bed for a time. Finally, the cavity left by a sloughing abscess of the ischio-rectal fossa is sometimes too extensive to be obliterated by the process of granulation without the aid of art; in some instances, in fact, both fossæ have been devastated, and the lower end of the rectum left isolated, to use Lisfranc's expression, "like the clapper of a bell." Healing may begin fairly, in a case of this kind, and go on for a time, but, contraction being impossible in consequence of the unyielding lateral walls of the cavity, the process gradually ceases. As a not infrequent cause of failure in healing in this region, lack of vital power, as from the tubercular diathesis or from temporary dyscrasia from other sources, is unquestionable. Impaired vitality is an admitted cause of abscess in the first instance, and naturally interferes with its subse-

quent healing. In phthisis the mechanical violence of the act of coughing, which calls the levatores ani into strong and sudden action, causing forcible concussion of the contents of the pelvis, increased by the absence, through emaciation, of the protective fatty cushions from the ischio-rectal cavities, by bruising delicate tissues, and rupturing blood-vessels thus left without support, assists in explaining the frequency of abscess, and also of fistula, in individuals of this class.

Having explained why abscess in this region so often fails in repair, it remains to take an account of the means at our command to overcome these difficulties and induce rapid and perfect cicatrization. They are: 1. The evacuation of any cavity containing pus, near the lower part of the rectum, at the earliest possible moment, the opening made for this purpose being not only fully large, but also so placed in a depending position as to obviate retention of pus. I may go further and advise the free incision of any tumor in this region that threatens, by the usual symptoms, to break down into pus. Puncture is not a good term to employ for this little operation; the abscess should always be freely laid open by an adequate incision. Do not wait for fluctuation, but, where there are increasing pain, heat, and redness, as well as swelling, give ether, and incise freely. It is never in the skin that healing subsequently flags, but in the altered tissues beneath. 2. Ample provision for drainage by means of caoutchouc tubes, horse-hair, or carbolized catgut, whenever there is a cavity large enough to admit them. 3. The use of antiseptic precautions at the time of opening the abscess, and careful antisep-

tic dressing afterward. In gangrenous abscesses, the use of continuous irrigation with an antiseptic liquid, as recommended by Volkmann after extirpation of the rectum. This is not easy to manage, but it is possible, and, where life is in question, from what I have seen of its good effect, I should consider it a duty to carry it out if possible. 4. Thorough evacuation of the large bowel before opening the abscess and entire rest as to defecation for some days thereafter. 5. The use of hygienic measures, such as ventilation, disinfectants, appropriate diet, with wine in proper cases, and change of air at the proper time, when feasible; and of such drugs (as cod-liver oil, quinine, and iron) as may be indicated to remedy existing depression of the vital powers and to aid in promoting repair. Locally, gentle stimulants to the granulating surface, varied as indicated by the appearance of the granulations; among those which I have found most useful are the nitric-acid lotion, lime-water (diluted or pure), aromatic wine or common claret, tincture of benzoin, tar-water, and balsam of Peru. They are often better applied by a wad of cotton wool or a small syringe. In opening an ano-rectal abscess of any size under an anæsthetic, I should also take the opportunity to paralyze the sphincter by gentle but forcible dilatation, for this measure, by insuring its greater quiescence for nearly a week, would add, in my judgment, to the chances of a successful result.*

* In the following case, repeated recovery from abscess took place under peculiar and unfavorable circumstances: Mrs. —, twenty-five, well nourished but pallid, came under my care in May, 1873, with mild syphilis, about a year after infection. Her symptoms gradually disappeared under mild mercurials, and she was still taking them and in good health when, in April, 1874, she suddenly broke down with a large collection of pus in the right buttock near the anus.

The study of abscess as a surgical disease, in any part of the body, or, in fact, the study of any local disease, involves the necessity of a knowledge of the general principles of surgery bearing upon its practical management, to furnish us with reasons for our treatment, and to prevent us from being mere routine practitioners, and I have assumed that you already possess more or less of this knowledge. If you do not, the best mode of acquiring it is, after a clinical introduction to a disease (so that you are in possession of something tangible for the mind to grasp), to follow up the introduction by a study of its general etiology and pathology, and in this way learn all that is known of its causes and nature. Now, there is no better locality in which to study abscess in this way, and to become familiar with its relations to sinus and fistula, than in this region.

It was freely evacuated at once, and, somewhat to my surprise, healed entirely in about a month. She took her pills (of bichloride and metallic iron), in which she had great faith, regularly until July, 1875, when she was delivered of a dead child, at full term, and had another collection of pus in the same place. Still continuing the pills, which she was unwilling to relinquish, she spent the winter at the South, returning in high health and well of her abscess. In January, 1877, she broke down again with an abscess of the opposite buttock, from which she got rapidly well. In August, 1878, she came, complaining of continuous dull pains in back of head and neck, sense of weakness, utter loss of appetite, pulse 120, temperature 100°. Took quinine and iodide of potassium, went to seaside, got no benefit, but in two weeks had an abscess, after which she got promptly well. In April, 1879, the same symptoms were repeated almost exactly, and with the same result. Mrs. — is now in what may be called high health, and has no appearances whatever of induration or fistula where the abscesses were situated. Here were five abscesses in as many years, some of them distinctly preceded by symptoms of blood-poisoning, all opened early and freely, and all healing promptly and unexpectedly, with marked evidence of relief to general symptoms.

LECTURE VI.

FISTULA IN ANO.

THE affection known as *fistula in ano*, which we shall next consider, is perhaps, after hæmorrhoids, the most common of all surgical maladies, and is described under this name by the earliest writers. Out of 4,000 consecutive cases of rectal disease, observed by Mr. Allingham at St. Mark's Hospital, London, 1,208, or nearly one third, were fistula. The disease occurs at all ages, and affects all classes. It has even been the sport of fashion, for Madame de Sévigné, who speaks of it in her letters as the "*maladie du roi*," says that under Louis XIV, who was a sufferer, it was very prevalent at court, and "many underwent an operation for its cure, even some who did not have the disease."

This troublesome malady is not an essential disease; it is simply the variety of ulcer known in surgery as "fistula," which has established itself in the region of the anus as a result of ordinary causes, which are here both frequent and intensified. We must recognize this fact at once, as it gives its proper place in surgical pathology to an affection which is not only exceedingly common, but which serves habitually as an illustration of many important surgical principles. Thus, fistula in ano has always been a

favorite subject with the masters of the art, and there are few of the great names in surgery that are not encountered in the study of its literature.

The use of the term fistula, no doubt, was originally suggested by the peculiar features presented by the disease in this locality, for there are some phases of it to which the name is certainly very appropriate. In many instances a hard, elongated, cylindrical body can be distinctly felt imbedded beneath the integuments of the perinæum or buttock, extending from an outer opening, usually not far from the orifice of the anus, inward toward the cavity of the gut; and, when faecal matter or bubbles of gas escape through the outer orifice, as sometimes happens, showing that this rounded and elongated body is hollow, it is not difficult to comprehend why the ancients called it a fistula, or pipe.

The points just noted constitute, in fact, the characteristic features of the disease, namely, an internal orifice opening into the bowel, an external orifice upon the outer integument, and an intervening fistulous track. This is its typical form. Sometimes there is no internal orifice communicating with the bowel—a possibility that has been disputed, but finally decided in our day, in the only way by which such questions can be decided, by demonstration from the dead body.* In this case there is, therefore, technically only a *sinus*, but custom has sanctioned for it the name of “blind external fistula.” For the same rea-

* Sir Benjamin Brodie denied the existence of such cases (Lectures in London *Lancet*, 1843-'44, vol. i, p. 592); but Mr. Curling (*Diseases of Rectum*, 1876, fourth edition) describes two specimens in the museum of St. Bartholomew's Hospital, in London; and Mr. H. Smith (Holmes's *Surgery*, vol. iv) speaks of three others at St. George's.

son the term "blind internal fistula" is used to designate that variety of the disease, also comparatively infrequent, in which there is an opening into the rectum, but none externally. The existence of these sub-varieties justifies the general division of all fistulæ in ano into "complete" and "incomplete"; the first, conforming to the typical standard, being really a fistula with two openings, and "forming a channel of communication between the interior of a hollow viscus and the outer air"; the latter, simply "sinuses," with only one opening (Fig. 11).



FIG. 11.—A, anus; R, rectum; B, a complete fistula; C, a blind internal fistula; D, a blind external fistula. (Gosselin.)

A very large majority of all fistulæ in ano are simply *subcutaneous*, i. e., they occupy the loose connective tissue between the delicate "semi-mucous" integument at the verge of the anus and the external sphincter muscle. These very common subcutaneous fistulæ are the result of the "marginal" abscesses already described, and they are the only variety of the disease to which the name fistula in

ano can be literally applied ; all other fistulæ in this region, to be strictly accurate, we should call *ano-rectal*, for they extend, from the region *around* the anus without, to the rectum within. Fistulæ of the latter class involve other tissues besides the skin and its underlying stratum, namely, the substance of the sphincter muscle, the connective and fatty tissues of the ischio-rectal fossæ, sometimes the upper spaces beside the rectum, called by Richet pelvi-rectal, and, finally, the walls of the rectum itself, for they very often burrow in the connective web between its muscular coat and mucous membrane, and isolate the latter completely, so that it can be felt as a very thin layer by a finger in the rectum, when a probe or director has been previously introduced into the fistulous track. Again, as a result of the burrowing of the abscess in which the fistula took its origin, or of subsequent abscesses provoked by blocking up of its outlet—a not infrequent complication—*secondary fistulæ* communicating with the original track are in time begotten. These branches may terminate in imperfectly discharging abscesses, which they have failed to drain, and thus constitute what are called *diverticula* ; or the secondary abscesses may find new outlets, by ulceration, and thus create additional external orifices. These, then, are the usually recognized forms and varieties of fistula in ano, and the terms by which they are described.

It may be as well to say at once that, when it is not the direct result of a wound or injury or of a surgical operation, a fistula always takes its origin in an abscess which has been prevented from healing. This is true of all fistulæ wherever situated. As we

have already seen, certain fistulæ in ano take their origin from abscesses which have formed at a distance—in connection with disease of the vertebral column, with necrosis of the pelvis, or in the superior pelvi-rectal space of Richet—and these fistulæ may make their appearance in the anal region without any preceding local symptoms. Thus, an abscess in the hip-joint having perforated the floor of the acetabulum and discharged into the ischio-rectal fossa, a patient may assert that no abscess has preceded his fistula, as we sometimes see stated in reported cases; whereas, in fact, the remoteness of the primitive lesions or the obscurity of its source has prevented its connection with the fistula from being recognized.

To grasp fully the *pathology* of fistula, we must go back to first principles and endeavor to comprehend the causes of the disease and the textural changes to which they have led, for only this knowledge can form the basis of rational prevention or of successful cure. Prevention, especially, at the present day, is forcing itself upon our attention. We must take time, therefore, to answer the question why our tissues are thus liable to be tunneled by new passages. In discussing the etiology of abscess in this region, I have already endeavored to demonstrate to you how fistulæ originate from abscesses, and, in connection with the treatment of abscess, to show how prompt healing can be best secured, and the formation of fistula and sinus prevented. It remains for us to answer the questions: What are the qualities of the newly formed materials by which the walls of these fistulous channels are lined? and What prevents them from healing? Without this knowledge

we can not intelligently select and apply remedial agents.

It may be fairly assumed that the walls of the original abscess—changed, of course, more or less, during the reparative effort that followed its discharge—are identical with the walls of the resulting fistula. A fistulous track, when laid open lengthwise by a sharp knife, presents internally the aspect and velvety feel of a mucous membrane; but, when magnified and minutely inspected, what seems to be a membrane is found to be only an ordinary granulating surface, the granulations being irregular in size and shape, unevenly distributed, and at some points absent, as though their growth had been suspended. Beneath this surface, which can not be dissected off as a membrane, is a denser substance of a pearly white color, showing under the microscope the fibrous texture of true skin, and often, if the fistula is of long standing, possessing almost the hardness of cartilage. This is, simply, a hard felting of connective or fibrous tissue, into which the granulations, which lined the walls of the original abscess, have developed during the impotent effort to fill up its cavity, and these granulations still linger, in diminished numbers and vigor, on its surface. Blood-vessels of recent formation abound in this tissue, for it bleeds readily from the contact of a probe, and liquor puris with a scant percentage of leucocytes is still secreted by it.

We are justified in concluding from these facts that, if a fistula be thus laid open during life, the flow of blood caused by the incision will be followed by a flow of liquor sanguinis, which will leave behind it the usual deposit of plastic lymph, and that all the

phenomena of repair by cell proliferation, if not again interrupted, will thenceforward go on in regular order and terminate in cicatrization. Even in the dense outer portion of the walls of a fistula, numerous leucocytes can be found in the meshes of the white fibrous tissue in its substance, together with numerous capillary vessels; it is, therefore, ready to resume the effort at repair, at any time, under the stimulus of new injury.

The internal surface of a fistula is still sometimes spoken of as a "pyogenic" or pus-producing membrane, even by surgeons who have rejected the old doctrine that a fistula is a secreting organ, established by a conservative effort of the organism in order to get rid of some "peccant humor" by means of a flow of pus. Inasmuch as this antiquated theory is at the foundation of a popular prejudice against the radical cure of fistula by surgical means, it is well to know certainly that the inner lining of a fistula is not a newly formed membrane, but that it is, histologically, identical with the surface of any ordinary ulcer which has been prevented from healing, resembling most perfectly, perhaps, that of the indolent ulcer, with its thickened borders and its surrounding embankment of induration.

You would also be justified in inferring from these facts that the internal surface of a fistula might possibly heal over like any other ulcer, and leave a dry, smooth, non-secreting track. We have the evidence of Le Gros * that, in such a case, the resulting cicatrix possesses the histological structure of true skin, except that yellow, elastic fibers, sweat-glands, and hair-

* Pozzi, *Étude sur les Fistules*, Thèse de Paris, 1873, pp. 19, 20.

bulbs are wanting. This tubular cicatrization is a rather rare occurrence in fistula following abscess, but we see examples of it elsewhere—in the holes pierced for ear-rings, in gastric and vesico-vaginal fistula after lumbar colotomy, and occasionally in the healing of the track of a seton or of a forgotten point of suture.

When fistulæ heal spontaneously, it is usually by the adhesion of opposed granulating surfaces, just as abscesses heal. The conditions required for this "secondary" union are a healthy state of the granulating surfaces and absolute rest for a limited time. The absence of these favorable conditions explains the rarity of this event; and yet exceptional instances are constantly occurring in which it takes place. Allingham relates quite a number of them in his last edition. Partial adhesions of the walls of a fistulous track happen very frequently; but the adhesions are broken up by accumulations of pus in the non-adherent portions of the track, and it is soon reëstablished.

Fistulæ are not often simply tubular in form; they are for the most part tortuous, with a caliber varying at different points, and they are also liable to send off branches and sometimes to form pouched diverticula. This explains the difficulty of introducing a probe or director along the whole route of a fistula without meeting obstruction, and why a slightly bent probe, the direction of which can be varied, is more readily passed than a straight one. There may be several fistulæ with but one common opening into the rectum, or they may form elbows and angles in the thickness of the buttock, and even open externally on different sides of the anus. A cloaca be-

hind the lower end of the gut, with an adjacent rectal opening into it, and communicating externally by two or more fistulous tracks which reach the surface from both sides of the rectum and thus partially encircle it, has been described as the "horse-shoe fistula."

It has been proposed, as a preliminary step in the treatment of a serious or complicated fistula, that its track should be straightened or rendered more smooth and even by the insertion of a minute drain for a time, or by internal section of the prominent ridges in its walls by means of a narrow-bladed knife on a director, with the object of insuring the success of a final operation, which would be compromised if a branch should escape division. This form of preparation might be advantageous in some instances; but, in every serious case, a careful preliminary study of the extent and direction of the fistulous tracks should be made, under an anæsthetic, previous to any operation for radical cure.

The typical fistula has an *external* and an *internal* orifice, and each of these requires a word of notice.

The *external* orifice may be quite small, with inverted margins, and difficult of detection; or prominent, with exuberant and protruding granulations; or, again, patulous and angry-looking, from recent ulceration. It is often situated very near the margin of the anus—sometimes, in fact, actually within the opening, so that it can not be brought in view without retracting the borders of the anus and inspecting closely between its wrinkles—or it may be found at a variable distance from its verge, on the perinæum or buttock, generally within two or three inches. Sir

Astley Cooper, however, in a dead body, once traced a sinus all the way from the groin to the vicinity of the rectum; and Mr. H. Smith relates a case in which a rectal fistula opened at the back part of the thigh. There is most frequently only a solitary external orifice, but often there are two or more openings, and in exceptional cases they may be quite numerous. I saw, some years ago, in a gentleman, a most aggravated case of fistula complicated with stricture of the urethra, in which, after a series of abscesses, there were no less than eleven openings on the perinæum and buttocks, and through many of them both urine and a discharge stained with fæces escaped.

The *internal* or rectal orifice may also be multiple, but this is rare. Curling reports the case of a lady, who continued to complain of pain in the rectum after an apparently successful operation for complete fistula by the knife, in whom he found on examination a second ulcer not far from the situation of the first, not perforating, as yet, but which had evidently escaped notice at the time of the operation. As it obstinately resisted treatment, he ultimately divided this ulcer and the sphincter at the same time and by the same incision, and a complete cure promptly followed.

The rectal orifice of a fistula often occupies the center of an area of mucous membrane which has been undermined by burrowing, as already described, and which is so loose and floating that the finger can not fix it, and the orifice is, therefore, not easily felt (Fig. 12).

The burrowing extends above the ulcerated opening in many instances, so that a probe carried to its upper limit might fail to discover the opening into

the bowel at this point, while it really lies on one side of the track much nearer to the anus (see Fig. 13).

In Fig. 13 there are two external orifices: one just at the verge of the anus, and a second at some dis-

FIG. 12.



FIG. 13.



FIG. 12.—A, point at which the fistula traverses the muscular coat of the rectum; B, its external orifice; I, internal orifice of the fistula; the mucous membrane is separated, by undermining, from the muscular coat of the gut, above and below this point. (Mollière.)

FIG. 13.—D, internal orifice common to two fistulous tracks, with undermining of mucous membrane; E, first external orifice; F, second external orifice.

tance from it. There is only one internal orifice, but the mucous membrane is undermined above it, and this same undermining below the internal orifice forms the fistulous track which opens externally just at the verge.

In a tuberculous subject the rectal orifice of a fistula is usually large and easily felt, and it gives the sensation of sharp and recently ulcerated edges; but in an otherwise healthy person the flabbiness of the rectal walls and the insignificant size of the opening may render its detection difficult. As Ribes first

demonstrated, the rectal orifice of a fistula is almost always situated just above the upper limit of the sphincter, where the rectal pouch is being puckered in by its constricting influence—the portion of the gut upon which the descending fæcal mass habitually impinges with the greatest impulse.

The *symptoms* of fistula in ano require our attention mainly in relation to *diagnosis*. In rare instances a fistula is discovered without any clear evidence as to its cause ; but in the great majority of cases there is a history of abscess, perhaps of a succession of abscesses, with failure of complete healing, or closure for a time and reappearance. The most prominent symptom of fistula is, therefore, a more or less constant purulent discharge, variable in its proportion of pus-globules, generally offensive in odor, and with a possible admixture of fæces or of gas from the cavity of the bowel. The presence of the two latter features of the discharge proves, certainly, that a fistula is "complete."

The symptom of pain in fistula is not usually urgent, except when a new abscess is forming, or after a suspension of the discharge from temporary healing of the external orifice, and when a necessity for reulceration occurs. In many cases it is entirely absent. The presence of fæces in the discharge, which is not common, is attended by increased soreness. Itching, and sometimes erythema or even eczema, may be excited by the constant moisture or by the contact and friction of dressings, especially in warm weather. A fistula has often been overlooked, its discharge being ascribed to eczema or, in women, to leucorrhœa. Syme says that he has frequently operated for fistula

upon patients who had been told by others that there was nothing the matter with them. The presence of even an occasional stain of blood or pus upon the clothing, or of frequent itching and uneasiness, however slight, or of crepitation from escape of gas, justifies an examination, which, on account of the occasional insignificance of the outer opening, should always be very carefully made.

For *examination*, a male patient is most advantageously placed on his back, upon a lounge, with the legs thrown up, the thighs strongly flexed, and the patient's hands clasped behind them, the part to be inspected being turned toward a strong light. In the case of a woman, an anæsthetic may be suggested; and, if the case is not very serious, it is desirable that the operation for its cure—which has previously been agreed upon—should be performed at the same time at the patient's residence, of course. In the latter case, the best position for the patient is that employed for vaginal inspection—on the back—unless complications are anticipated which require accurate exploration of the interior of the rectum by the speculum, in which case Sims's position is to be preferred.

In either case, you will commence your physical examination by feeling carefully around the anus for lumps and ridges, and for evidences of undermining of the integuments. These consist of a peculiar "boggy" thickening of the skin and of the tissue beneath it, and indicate, when there is no external orifice, the probable presence of an internal communication of a blind fistula with the rectum. Except under ether, a fistula is more readily traversed by a probe before introducing a finger within the bowel, for this is

likely to excite the sphincter to spasmodic contraction. The curve of the probe may be varied, and sometimes a director or a bougie of small size will be found preferable. When the internal orifice can not be discovered by these means, the injection of milk into the fistula from without, while the cavity of the bowel is kept in sight by the speculum, is often successful. The external orifice of a fistula is not unfrequently temporarily skinned over, and may thus escape notice. The general character of the fistula, the presence of ramifications and their extent, and the possible complications—especially as to the existence of diverticula, the chance of a deep origin, of connection with disease of bone, or of the coexistence of a stricture or of cancer—are all to be included in the diagnosis. The region immediately above the sphincter should be explored by the finger with great care, and if necessary by the speculum; for this is the most common seat of a perforating ulcer, and therefore of the internal opening of a fistula. Thin, soft spots in the mucous membrane of the gut should be sought for, undermining of the mucous membrane recognized, and its extent, if possible, determined. These thin spots indicate impending ulceration into the rectum from cavities outside, and it is at such points and for this reason that it is good practice to complete the perforation artificially when no rectal opening of an external fistula can be discovered. The undermining often extends above the point where ulceration is threatened (Figs. 12 and 13), sometimes for several inches, effected by the original abscess before it succeeded in discharging externally. I will anticipate by repeating here that it is proper to perforate the

bowel at such a point when recognized, and to treat the fistula as though it were complete, with confidence that the undermining above it will consolidate, because its depending outlet will have been made sufficiently free by the incision below. Brodie, who advocates this practice, suggests that when it is adopted the freedom of the lower opening should be insured by liberal division of the sphincter.

In the rare cases in which there is an opening suspected high up in the bowel beyond the reach of the finger, special measures of exploration will be mentioned hereafter.

Although it is very desirable to find the rectal opening of a fistula when it exists, because the incision of a fistula in which this opening is not included is likely to fail, you can do nothing better than to be very careful in your exploration, and to use the speculum and the milk injection. Mr. J. R. Lane, of the St. Mark's Hospital for diseases of the rectum and anus, who reports sixty-eight cases of fistula operated upon in eight months, found forty of them complete, twenty blind external, and two blind internal.* He relied upon the milk test in the twenty cases in which he failed to find an opening into the rectum, and made an artificial opening as I have advised, and they all healed soundly. My own experience is in accordance with this.

There is a rare sub-variety of blind internal fistula, trifling as to extent, but causing acute pain after and during defecation something like that of fissure, which is located in the full grasp of the sphincter and not always easy to discover. It often originates

* *Ranking's Abstract*, 1859, vol. ii, p. 207.

in perforation of one of the little lacunæ of the rectum situated just above the upper margin of the sphincter, and burrows downward between the mucocutaneous membrane and the sphincter.*

It is to be noticed in connection with diagnosis that both the amount and the character of the discharge from a fistula have their significance: a copious purulent flow indicates a large secreting cavity (perhaps distant—above the levator—or connected with disease of bone); a slight watery discharge means a limited track, disposed to heal; an intermittent discharge is suggestive of *diverticula*. Finally, in women, the discharge from a fistula is often referred by the patient to the vagina.

When the probe passes very deeply into a fistulous opening and can not be distinctly felt from the rectum, giving the idea that some considerable thickness of tissue intervenes between the finger in the rectum and the instrument in the fistulous track, then the latter has probably taken its origin in an abscess situated in the "superior pelvi-rectal space" above the levator-ani muscle. The finger pushed well up and pressing outward toward the probe may elicit pain in this locality or even provoke an additional gush of pus. If there is no clear history of an abscess nearer to the anus, and there is at the same time a free, habitual, purulent discharge from the fistula, the diagnosis is confirmed, especially if there have been previously existing symptoms of deep pelvic trouble not due to diseased bone. The latter is one of

* This is mentioned by Gross (*Syst. Surg.*, Philad., 1872, p. 630) and by Mollière (*ut supra*, p. 126), and is probably the affection described by Reynell Coates, after Physick (in the *Am. Cyc. of Pract. Med. Surg.*, Philad., 1836, art. *Anus*, vol. ii, p. 123).

the rare sources of fistula near the anus, and it also gives rise to many of the symptoms just described. There is, however, more chronic failure of health generally associated with diseased bone, and its location may be discovered by the usual signs on careful search—and this should not be neglected. The study of well-observed cases is necessary to render these rarer forms of fistula familiar.*

Fistula in ano occurs at all periods of life. Al-

* *Case*.—A tailor, aged fifty-one, entered St. Louis Hospital, Paris, on the 1st of February, 1872, for a free purulent discharge from the neighborhood of the anus, which had made its appearance some months before without any history of abscess. On the left buttock, two inches from the anus, there was an orifice into which a probe passed, parallel with the rectum, nearly four inches. Its extremity could not be felt by the finger in the rectum, and the track of the fistula was estimated to be an inch distant from the bowel. M. Tillaux declined to use the knife on account of the great depth of the fistula and the amount of tissue to be divided, and cauterized its track by means of a platinum wire heated by Middeldorf's galvano-caustic apparatus. The patient left the hospital on the 24th of February with no appreciable benefit. (*Étude sur les Fistules*, etc., Pozzi, *Thèse de Paris*, 1873, p. 50.)

Case.—A soldier of thirty, who had suffered for several years with a severe pain in the loin on the right side, aggravated by motion, but without any local swelling or tenderness on pressure, discovered a soft, indolent swelling at the right side of the anus which, three weeks later, broke and discharged very freely. With this the pain of the loins disappeared, but his general health continued to steadily fail. His fistula was examined with a view to an operation, but the probe, entering its external orifice, diverged from the rectum so that it could not be felt by the finger in the bowel, and passed very deeply upward and backward. The idea of operating was therefore abandoned. The patient finally wasted away and died, hectic. After death, the fistula was found to traverse the levator ani, whence it followed the course of the hypogastric vessels to the inner border of the psoas, and led to an extensive caries of the bodies of the twelfth dorsal and first lumbar vertebrae. (Ribes, *Mém. de la Société d'Émulation*, 1826, t. ix, p. 119.)

Syme mentions two cases in which a chronic discharge was kept up by necrosed bone. One was that of a young woman who had suffered from a fistula for five years; it followed an abscess caused by a strain received in jumping from a stage-coach. On introducing a probe, he felt a loose fragment of bone, and extracted a thin scale which had evidently exfoliated from some injured point at a distance, and was working itself out. After this the fistula healed. (*Principles of Surgery*, etc., Phila., 1866, p. 548.)

lingham has "operated upon an infant in arms and upon a man of seventy-eight." Gross mentions four cases in children; in the youngest, the disease appeared at six months, and was double, each fistula having been preceded by an abscess.* It is more common in middle life, and is seen more frequently in men than in women. Its *duration* may extend through many years, for the very tolerable suffering attending the disease does not force the patient to seek relief. Syme operated on a gentleman between fifty and sixty for a complete fistula with two external openings which had existed for thirty-five years.

There is certainly a chance that a fistula in ano may get well spontaneously. Ribes tells us that, in his very numerous examinations of dead bodies, he "often found cicatrices as of fistulous orifices outside near the anus, and also in the lower part of the rectum, with a track of thickened, almost tendinous tissue extending between them"; and he draws the inference that many persons are affected with fistula without being aware of it, and get well spontaneously. Allingham refers to no less than fourteen instances (out of 1,208, or 1.15 per cent.) in which the disease got well after his examination without treatment or by the use of very simple palliatives.†

* *Op. cit.*, vol. ii, p. 629.

† Here is one of them: *Complete Fistula in Ano; Spontaneous Cure*.—W. H. K—, aged thirty, clerk; admitted into St. Mark's, April 2, 1867. Not very strong, habits regular. On examination, a small but complete fistula was found on the right side of the anus, the external opening being quite an inch from it, the internal aperture in the usual place between the two sphincters. In the middle of May I took him in as an indoor patient, and, on going to operate, I found the external orifice so firmly closed that I could not, without unwarrantable force, get a probe into it; I could feel the internal aperture very small. There was no pain, so I left him. Next week I again examined him, and found the internal orifice also closed. I kept him in the hospital another week, and

This leads us naturally to consider the *prognosis* of anal fistula, and to ask ourselves what other results are to be expected besides the rather remote chance of spontaneous cure in case no treatment whatever is undertaken for the cure of the disease? It may be answered with confidence that in the great majority of cases fistula not only persists indefinitely, but that, as a rule, the disease tends to get worse—by burrowing, and by the formation of secondary abscesses, new tracks, and new orifices. There is, moreover, a possibility that it may increase in extent so as to render an operation for its cure so serious, from the corresponding extent of the incisions required, as to impair the retentive power of the sphincter, or even to endanger life, and it may thus get entirely beyond remedy. There is also a certain amount of danger to be feared from a persistent purulent discharge, as of the “amylaceous” or waxy degeneration of vital organs, which is attracting increasing attention from pathologists. Chassaignac, who treats the subject of fistula in the new *Dictionnaire Encyclopédique*, considers this danger a sufficient warrant for undertaking the cure of this affection under all circumstances.

Are there cases of fistula in which it would be unwise to undertake a curative operation? Erichsen says: “Occasionally in elderly people a blind internal fistula will be found which, falling into a very chronic state and discharging but little, is a source of but

still the fistula remained healed, so I put him upon the out-patient list, and he attended up to the end of August, when, finding the fistula still closed, there being no pain and no induration, I discharged him as cured, requesting him to come again immediately on any return of pain or swelling. I have not seen him since.

very trivial discomfort, and will continue for years without giving the patient serious local inconvenience, and in no way disturbing the general health. In such cases, I believe there is often far less risk in leaving the fistula untouched than in subjecting the patient at an advanced period of life to the hazards of an operation." * Again, when there is serious disease of internal organs—and it is the lungs which are usually at fault—the possibility of doing harm by suppressing an habitual discharge which may have been acting as a revulsive, like a seton or issue, has been regarded as an objection to interference.†

* *Science and Art of Surgery*, eighth edition, Phila., 1878, vol. ii, p. 688.

† Quain and Bushe favor this opinion. Gross thinks that curing the discharge might "throw the onus upon the more important organ and thereby induce death prematurely." On the other hand, J. R. Lane mentions half a dozen phthisical cases which "all healed promptly and kindly, and were improved in health by the operation" (*op. cit.*, p. 254). Erichsen has operated with advantage "early in the disease." Allingham says, as the result of large experience, "When a fistula has kindly healed, I never knew a phthisical patient to be directly the worse for it" (*op. cit.*, 1873, p. 64). Curling concludes that, in advanced cases of phthisis, no judicious surgeon would venture to use the knife, "but I am convinced," he adds, "that in an early stage of the disease a source of debility may often be removed and the comfort of the patient promoted by an operation, which I have performed with benefit in several instances" (fourth edition, Lond., 1876). In France there seems to be no fixed doctrine held on the question of operating for fistula in phthisis. Chassaignac (*ut supra*) considers that the idea that arresting a morbid discharge can harm a phthisical patient "is a deplorable mistake." Mollière (*loc. cit.*, p. 120) differs from Chassaignac, believing that in a great number of cases interference does harm, and that a fistula may be very useful. Gosselin (art. *Anus*, in the *Nouveau Dictionnaire*) does not commit himself. Vidal de Cassis (*Gaz. Méd. de Paris*, 1833, p. 819), in connection with the following case, expresses an opinion which is no doubt still prevalent in France: "A man of thirty-six, with phthisis and internal piles as well as fistula, was cut twice for the latter, and finally cured. Shortly after, he was attacked by bleeding from the lungs. The application of leeches to the anus caused this symptom to disappear, and a very decided improvement in the general health followed." Vidal adds the remark that it is right to operate in phthisis, because, "if the operation is likely to be injurious, the wound will not heal."

No judicious surgeon would operate with a view to a radical cure upon a patient with advanced cardiac disease, cirrhosis of the liver, Bright's disease, or cancer; but, in the conflict of evidence as regards pulmonary disease, the tendency of opinion is clearly growing more favorable to well-considered operative interference. On the following points I do not hesitate to speak positively: there is no reliable evidence that the suppression of an habitual discharge can do harm in these cases; on the contrary, it is pretty certainly a positive advantage to arrest it; and I would advise the attempt to cure a fistula in a patient with physical signs of phthisis, provided there were no positively advancing softening or severe cough, because, in addition to stopping a waste, it would remove an impediment to exercise in the open air, possibly on horseback. The objections to operating where there is softening or hectic are, that the concussion from coughing and the lack of power might prevent the wound from healing, and the use of the knife would necessitate confinement to bed, and thus injure the patient.

In cases of doubt, and where mental depression is likely to follow a refusal to operate, there are milder remedies than the knife, which are worthy of consideration.

The question whether the incision necessary to cure a fistula can or can not be made to heal, depends for its answer upon the patient's ability to assimilate food. A successful result is often attained in quite desperate cases by good medical and dietetic management and change of air; but, where there is doubt, it is well to palliate, as regards the fistula, and employ means to

improve the general health, if possible, before using the knife.*

Under the head of *treatment* of fistula in ano, *prevention* takes the first place. The means at our command to prevent the formation of a fistula are mainly comprised in the treatment of abscess near the anus and in the employment of measures which will secure the prompt healing of the latter; and these have been already fully considered. Where a wound involving the rectum is in question, after the arrest of bleeding and the removal of foreign matter, a free depending outlet should be provided for the discharge, and all other means employed necessary to secure drainage, together with strict cleanliness, antiseptics, and the measures already enumerated for promoting rapid healing in abscess. When a patient is seen early, and these means are used with intelligence and strict attention to detail—especially in regard to antiseptic dressings—the formation of a fistula should be prevented, in a fairly healthy subject, in nine cases out of ten. It is a noteworthy fact that, in the extensive injuries inflicted on these parts in gunshot wounds,

* The following case has a melancholy interest: A man with phthisis and fistula of limited extent entered Hôtel Dieu, Paris, in October, 1871. His fistula was cut, but did not heal. It was then excised, and the wound dressed with alcohol. About this time, a new abscess, very small and indolent, was discovered on the opposite side of the anus. When it broke, a probe was found to enter no less than three inches and a half, and did not then reach the rectum. This new fistula was diagnosticated as taking its origin in the pelvi-rectal space. On the 10th of December an enterotome was applied to this deep fistula by Richet. The instrument remained in place ten days, and, when it fell, a gap remained, three and a half inches in extent, communicating largely with the rectum. On the 12th of January it is noted that "the wound is healing; the anus can squeeze the finger; general condition of the patient, bad." The patient was sent to the Convalescent Hospital, at Vincennes, where the wound entirely healed. The phthisis continued to advance. (Pozzi, *ut supra*, obs. vi, p. 48.)

repair takes place often with unexpected rapidity, and fistula is of exceptional occurrence. It is hardly necessary to relate illustrative cases or to enlarge upon the details of preventive treatment; they are the legitimate application of the improved surgical methods of the day, which must, sooner or later, produce the result of diminishing the frequency of fistula.

Treatment.—In connection with the histology of fistula, I endeavored to prove to you that the apparently permanent character of this affection may be interrupted at any moment by well-directed surgical interference; that its division by the knife, for example, would be followed, under favorable circumstances, by an effort to heal not only the incision but the fistulous track itself, by renewing reparative action in its own walls; that the tendency to repair has not been extinguished—it is simply in abeyance; and that the new injury serves to reëxcite it to activity. This, then, is in reality the surgeon's object, not only in using the knife, but in all the other methods of cure devised for fistula; and, upon this renewal of reparative effort, however provoked, he relies for the ultimate consolidation of the abnormal track. Experience has proved beyond a doubt that the most certain of the surgical remedies for sinus and fistula in general is to lay open the tubular ulcer from end to end with the knife, and to take measures subsequently to insure that the healing by granulation begins at the bottom of the track and goes on solidly to cicatrization. There is often a tendency in the sides and edges of the incision to permanently unite and to bridge over and reproduce the original cavity; hence,

the caution to see that it heals solidly from the bottom. This is the mechanism of the process on which I would advise you to rely as the surest cure for fistula in ano in the majority of cases.

Ligature.—The same result may possibly be attained by inclosing the parts to be divided in a *ligature*, and leaving it in place to act like a seton and ultimately cut itself out. The process is uncleanly, infinitely more tedious, and, in the aggregate, gives even more pain than the knife. To shorten it, Mr. Luke attached a screw tourniquet to the cord employed as a ligature, and tightened it daily. I have known a musket-ball to be strung upon the ligature to hasten its action. An old French surgeon used lead wire, twisting it daily. He speaks of the ligature as “the method of the timid.”

The caoutchouc ligature, which has lately found favor, tends to cut out more rapidly by its elasticity. It is certainly a great improvement upon the old form of ligature. Allingham, following Dittel, of Vienna, has employed it in more than 150 cases, and speaks well of it; but says he “did anticipate a wider use for it than he has found.”*



FIG. 14 represents an instrument devised by Mr. Allingham, which has been advantageously modified in this city. Fine caoutchouc tubing has been found preferable to solid cord; and, instead of knotting it, leaden clamps answer a better purpose. The ligature should be drawn as tightly as possible; and, if much tissue be included, a second application may be necessary.

* Third edition, London, 1879, p. 29.

The great objection to it is that, if there is any branching of the fistula, or if more than a solitary track exists, the patient will not get well at one operation. To apply it effectively, some practice is required, and the employment of instruments made especially for the purpose of passing the cord (Fig. 14).

This mode of operating for fistula has its advantages: it can be applied with but a moderate amount of pain; the patient can walk about without interfering with the process of cure; there is no bleeding; it is applicable in phthisis, as a compromise for the knife; and, finally, it may be used in deep, bad fistulæ, as an auxiliary to the knife.*

The cure of fistula has been attempted by means of injections of tincture of iodine, but, like all other escharotics—perchloride of iron, sulphate of copper, nitrate of silver, chloride of zinc, etc.—whether solid or in solution, they have proved to be too painful and uncertain, and are now rarely employed.†

* Courty, of Montpellier, in a clinical lecture published in the *Bulletin Thérapeutique*, speaks highly of the caoutchouc ligature after fair trial. He says that he knots it tightly, gives a dose of morphine, and regards his work as done. It comes away in sixteen to eighteen days, and leaves the parts healed (*Am. Jour. Med. Sci.*, July, 1875, p. 259). Mollière (*op. cit.*) speaks favorably of it. Esmarch and Bardeleben also commend the ligature within certain limits. Ashhurst (*Am. Jour. Med. Sci.*, July, 1875, p. 259) details a case of failure.

† Dr. C. Clay, of Manchester, England, inspired possibly by an essay by Boinet (in *Arch. Gén. de Méd.*, Dec., 1843), claiming exaggerated virtues for iodine, reports (in the *Lond. Med. Times*, 1843) a case of fistula of seven years' duration cured by nine injections of tincture of iodine, applied every other day, each being followed by severe pain. The cure was complete in three weeks. Dr. E. C. Huse, of Rockford, Illinois (*N. Y. Med. Rec.*, March 15, 1871), reports four cases in which he radically cured fistula in ano by injecting a saturated ethereal tincture of iodine—all the cases, in fact, in which he tried this method. He previously washes out the fistula by injecting warm water. Dr. H. considers the ethereal stronger than the alcoholic tincture, and "therefore more likely to excite adhesive inflammation."

There is little doubt but that many cases of fistula might be cured without an operation, by keeping the external orifice constantly free and securing accurate and complete drainage and at the same time gently stimulating the granulating surface; but the time and trouble it demands and the uncertainty of its result will always limit this mode of treatment to exceptional cases. With the poor, lack of means, and with the busy, lack of time, will lead both of these classes to prefer a more rapid and certain method of cure; and there are not a few cases on record in which the knife has been finally resorted to for the completion of a cure begun by a so-called milder method.*

To return to the details of the cutting operation, and its application to the various phases of the disease encountered in practice, I would advise you, in the first place, to employ ether in all but the simplest cases. The route of a sinus can be more easily traced, and a probe or director passed into the rectum through a fistula, when the patient is under anæsthetic influence; and it has been my practice, in case of delay or difficulty in finding the inner orifice of the fistula, to make one artificially by perforating the mucous membrane, when it is all that intervenes, with the point of a director, just above the sphincter. Then, bringing the point of the director out at the anus, the

* Verneuil denies that fistulous tracks are kept from healing by faecal and other matters getting into them.

Allingham records several cases treated with success by applying carbolic acid, diluted with ten per cent. of glycerine, on a probe armed with a little wad of cotton wool, with which he "wipes out the sinus thoroughly," inserting a drainage-tube twenty-four hours later. He also uses a perforated bone shirt-stud in the external orifice to secure its patency. But he adds that this treatment is only suited for a rich man with plenty of time.

operation can be completed by running a stout bistoury along its groove, and dividing all the included parts. The manœuvre will be facilitated by using a silver director, which may be bent. The French surgeons employ a delicate gorget of boxwood, concave on one side, to introduce through the anus and receive the point of the director, which is then committed to an assistant, while a knife is introduced along the groove of the director until its point strikes the wood, when knife and gorget are withdrawn together. The latter is the preferable mode of performing the operation when the amount of tissues to be divided is large, as, for example, when the whole thickness of the sphincter is included. When the mass to be cut through is less, and the track freely permeable, it is the habit of some surgeons to introduce a probe-pointed, curved bistoury through the fistula, and, receiving its extremity upon the pulp of the left index-finger in the rectum, to withdraw knife and finger together. Danger to the finger, in case of breakage of the knife-blade, led Bushe, as I have been told, always to substitute a candle for the former.

When loss of blood is feared, the use of the thermocautery of Paquelin forms an exceedingly valuable addition to our resources in the operation for fistula. The red-hot knife may be readily substituted for the bistoury; it leaves the divided parts coated with an eschar, or a touch will complete the eschar where raw surfaces are exposed by retraction of the parts incised by the cautery; and it does away with the necessity of after-dressing. It is in my experience a good substitute for the *écraseur* in cases where a high internal opening necessitates free division. The use of a

proper speculum and guard renders the manipulation entirely feasible. Even where the *écraseur* has been applied, it may still be useful in preventing the oozing that so often follows the severing of the last portion of the included tissues. Moreover, the actual cautery has much power in favorably modifying the subsequent effort at healing, and the eschar it leaves forms a veritable antiseptic dressing.

It sometimes happens that the cavity of the original abscess has been extensive, and that there is a considerable amount of undermined integument, reaching even to the buttock—perhaps with several imperfect external openings ; and, through defective vitality on the part of the patient, the process of repair may not have fairly commenced even after the lapse of some time, or burrowing may be still in progress. Here the treatment indicated is to make free depending openings, so as to secure the prompt escape of all fluids secreted in the cavity of the abscess or its ramifications, and to administer well-selected generous diet, with tonic medicines, giving your patient, if necessary, a change of air, perhaps to the seaside, and delaying the operation for the cure of the fistulous communication with the bowel until Nature is ready to second your further interference by a healthy reparative effort.

Or, again, your patient may be the subject of progressive organic disease in some vital organ ; of tubercular disease of the lungs, for example, the fistulous abscess at the anus being but an intercurrent malady—another evidence, in fact, of imperfect textural nutrition in an already enfeebled constitution. In this case, you have little to hope for from surgical treat-

ment; all your skill is to be directed against the tubercular diathesis and the pulmonary disease, which are placing life in immediate danger. In short, to render the operation for the cure of fistula in ano reasonably certain of success, your patient's general condition of health must be sufficiently good to warrant the anticipation that the parts will heal promptly, after you have placed them in a favorable position for healing. In other words, it is Nature that really effects the cure, the function of the surgeon being limited to the removal of impediments and to securing fair play for her efforts.

In a case of fistula where the external opening is situated at a considerable distance from the orifice of the anus, it will be proper for you to trace up the sinus with a probe or director, and endeavor to effect a counter-opening nearer to the anus, through which the operation may be completed by less extensive division of parts. The freedom of the new opening and its depending position will probably lead to the consolidation of the remainder of the sinus without laying it open throughout its whole length.

When a fistula has several external openings—and in hospital practice we not unfrequently encounter old cases, where the disease has been of long standing and complicated by a repetition of abscesses, in which the parts around the anus are riddled by them—there is room for the exercise of much good judgment in the management of the various sinuses in such a manner as to avoid too extensive incisions and yet to secure a successful result to the operation. If the rule of unhesitatingly laying open every old sinus is blindly followed, in addition to cutting freely into the

bowel, which at first sight seems necessary in such a case, the surgeon may possibly impose a heavier task upon the reparative powers of the patient than they are able to accomplish. I have seen cases of this description in hospitals in which Nature's powers had been miscalculated and in which wounds made for the purpose of curing fistulæ had entirely refused to heal—in subjects, too, where no organic disease—nothing but simple lack of vital capacity to complete the process of repair—was present to account for the failure. I would have you remember this practical fact, therefore, and exercise due caution in regard to the extent of your incisions. It is better, after careful study of the case, to lay open several of the sinuses into one, if possible, and then wait until they have granulated and begun fairly to contract before repeating the preliminary operation, if necessary, upon others, watching meanwhile the patient's general condition, and securing for him every possible hygienic and dietetic advantage. When you have thus succeeded in reducing the number of the sinuses and their external openings, if the prospect seems favorable, the operation may be completed. I succeeded in a very unpromising case of this kind, in a patient from the Southwest, with a broken constitution, after three preparatory operations, the intervals between them having been passed at the seaside.

I have just cautioned you against the possible error of using the knife with too much freedom. Now, it is as well to know that you may also err in the opposite direction, and not use it quite enough. There are few surgical diseases in which the healing process habitually shows less vigor than in fistula; it

is difficult to arouse it in the first place—nothing short of a cutting instrument answering the purpose; then it readily flags, without apparent cause; and, as I have already stated, it sometimes dies out entirely. Now, there are reasons for this peculiarity which we must seek both in the causes which give origin to the disease and in the circumstances by which it is perpetuated. Those in whom it occurs, if not constitutionally feeble, are already defective in vital power through the influence of disease, unhealthy occupations, or bad habits of life.* The parts affected are unfavorably situated in respect to circulation; the veins by which it is drained of its effete blood being mainly destitute of valves, and often in a varicose and over-distended state, as I have already had occasion to describe when explaining the pathology of internal hæmorrhoids. There is consequently, from venous stagnation or congestion, a defective and irregular supply of pure arterial blood transmitted through their capillary vessels. Now, we know that a steady and ample supply of freshly arterialized blood is necessary for the healthy nutrition of a part. It is even more necessary in a part where the process of repair is going on, as this involves growth and development as well as nutrition. Rapid reparation would be as unlikely to follow an injury or a surgical operation under these circumstances of defective circulation as for a farmer to reap a good crop from badly drained land, no matter how thoroughly he might plow it.

Again, in fistulæ of long standing, the walls of the sinuses are hard and gristly, and their surfaces glazed

* Henry Lee says that London tailors are especially liable to abscess and fistula in connection with piles. (*Lectures on Practical Pathology and Surgery*, third edition, vol. i, p. 153, London, 1870.)

and destitute of granulations. Their condition is very much the same as that of an *indolent varicose ulcer*, of which you see so many examples in the adjoining hospital, where the effort to heal has been systematically balked, until it ceases entirely, and the materials brought for the purposes of repair accumulate as a worse than useless embankment of induration. Now, in order to stimulate an indolent ulcer of the leg to heal, we improve the blood-supply of the part by keeping the limb in a horizontal position, and applying equable and systematic pressure by means of adhesive straps or a bandage. We can not bring such means as these to bear upon the indurated tissues in which old sinuses and fistulæ in the region of the anus are imbedded, and we are therefore compelled to use the knife upon them, and this is the practical point at which I am aiming. In operating upon old fistulæ, do not hesitate to freely incise the hard gristly walls of the sinuses you lay open. Your scarifications, if confined to the indurated tissues, can do no harm, and will contribute greatly to their rapid absorption, and to the restoration of a natural and supple condition to the parts, which is necessary to healthy healing. I have heard the late Dr. Cheeseman remark, while operating in this way at the New York Hospital upon an old fistula, "The more I cut these cases, the sooner they get well." This is what is meant by "Mr. Salmon's famous back cut," as it is called at St. Mark's, in London.*

I have devoted most of my remarks upon the subject of treatment to the management of difficult cases, of which a large proportion find their way into

* Author of *A Practical Essay on Stricture of the Rectum*, London, 1833.

the metropolitan hospitals. In private practice, you will more frequently encounter cases of fistula of recent occurrence and limited extent, which will yield to judicious treatment with little delay; but it is as well to be prepared for the bad cases.

In regard to the dressing of the wound after operation and other points of after-treatment, a few words are to be said. As soon as the necessary incisions have been completed, carefully and deliberately seek out and apply a ligature to any points which may give arterial blood. There is generally a good deal of oozing from the hard cartilage-like tissue around old sinuses, for the walls of the small vessels which traverse it can not contract, as in supple, healthy parts; they are converted into minute venous sinuses—*canalisés*, as the French term this condition. It is usual to meet this tendency to ooze by pressure, filling in the incisions with picked lint, covering the lint with a compress, and applying a T bandage over all; and this serves for the first dressing. Or, you may syringe the wound with a weak solution of the subsulphate of iron, and afterward apply a stronger solution freely to the whole cut surface, forming thus a crust of coagulum which will take the place of any other dressing. This preparation is in no degree escharotic, and I have thought, in quite a number of recent wounds to which I have applied it, that even the pure salt, in the form of dry powder, exercised a favorable influence upon the subsequent healing process. It certainly leaves the wound in a similar condition as under Nature's dressing—the scab.*

* Professor J. J. Chisholm, of the University of Maryland, has proved "by long experience the utility" of the subsulphate of iron as an after-dressing in

As a rule, however, the hæmorrhage is trifling; and it is not desirable, under any circumstances, to insert more lint into the wounds than just what is necessary to keep the cut surfaces asunder, as its presence adds to the subsequent discomfort of the patient. I have known too liberal dressing to cause much distress, and even to be followed by retention of urine. But, unless the thermo-cautery knife has been employed or the dry powder of the subsulphate has been applied as a dressing, lint or some other substitute for it should be placed honestly in contact with the bottom of the incisions; otherwise, their design, which is to bring about suppuration and granulation of the whole exposed surface, might be defeated by their immediate reunion. After the first dressing, evacuation of the bowels should be put off for two, three, or four days, by the aid of a little paregoric, if required; and, when the proper time has arrived, the administration of a moderate dose of oil will bring away the dressings with the contents of the bowels, the T bandage having been previously cut away. After this, a lighter dressing every day or two, or the simple introduction of the well-greased finger down to the bottom of the wound, to insure its healing honestly, and to prevent any attempt at the renewal of sinuses by superficial bridges of granulations, is all that is required.

At first, these wounds heal vigorously; hardness melts away, florid granulations sprout rapidly, and everything looks favorably. But there usually comes a time, about when the patient begins to sit up, when

fistula, immediately after the incision. (*Baltimore Medical Journal*, No. II, p. 81, February, 1870.)

the vigor of the healing process commences very manifestly to diminish. The "stimulus of the knife," as John Hunter calls it, has worn out. I have thought that the upright and especially the sitting position had a good deal to do with this characteristic retardation of the cure after operation for fistula, and I have, therefore, kept my patients in bed as long as I possibly could without injury to the general health, and have found the period of cure shortened by this course.* In most cases the ultimate healing of the wound is accomplished more slowly than the patient's hopes have led him to anticipate, and it is as well to warn him early not to expect a very rapid cure—its certainty and permanence being even more desirable than rapidity.

Is there any justification for attempting to cure fistula in ano by other means than the knife? Timidity, the hæmorrhagic diathesis, the existence of doubts as to the gravity of a coexistent organic disease, are the most probable objections to a cutting operation, and, if they seem valid, the elastic ligature, as the next best remedy, may be properly substituted. But there are individuals to be found in every community of any size who make a living by ministering to the fears of the timorous with remedies "better and safer than the use of the knife," and I have heard of "wonderful cures" effected, in very simple cases, after months of daily attendance, by means of thread setons. I would advise you not to give attention to

* This conflicts with Syme, who considers it useless to keep a patient in bed after the first few days. Some patients bear confinement better than others, and each case must be judged according to its requirements; but, where a wound is going on favorably, it is better in this respect to make haste slowly.

the groundless apprehensions inspired by an operation which, in the hands of a judicious surgeon, is both safe and sure.

There is a certain danger attending all operations for fistula in ano in which the sphincter muscles have been entirely divided—whether by the knife, ligature, or seton—and that is a loss of power of perfect contraction at the anus, so that gas or even fæces, when liquid, may occasionally escape. This condition is generally spoken of as “incontinence,” but it would be better called weakness or insufficiency of the sphincter. In my experience, this rarely occurs except where there has been loss of substance by sloughing or repeated abscesses, or where the muscles have been divided entirely at two or more points. The double division of the sphincter should always be avoided if possible; but, even if unavoidable, insufficiency would probably not follow in a vigorous subject.* The sphincter is usually weak

* I was consulted, recently, by a healthy-looking gentleman of middle age, about to marry a second time, for occasional inability to prevent the escape of flatus from the anus, and, when disposed to looseness, he was liable to slight incontinence of fæces. He had been operated upon twenty years before, but, mainly through his own imprudence in going home too soon, was not cured. Soon after, other abscesses followed, and one of them was very severe and extensive, leaving several fistulous tracks. These were subsequently all laid open, and healed soundly. On examination, I found the anal orifice retracted at least two inches more deeply than usual between the buttocks, so that a vigorous effort was necessary to bring it into view. A dense, unyielding cicatrix formed its posterior margin, and there was a little mass of healthy-looking mucous membrane protruding very slightly. There was no grip to the sphincter, and the muscle had been obviously divided at several points. In this case there had evidently been loss of substance of the pelvic connective tissue and much retraction during cicatrization. I judged also, from the sensation received when he tried to grip the finger, that the levatores ani were habitually brought into action to supplement the defective sphincter, and this contributed, also, to the retraction of the anus, which presented the general appearance and characteristics of a case in which two inches of the rectum, including the

from atrophy in persons who suffer from prolapse, and also in those who are naturally delicate or phthisical; and its vigor and capacity should always be taken into consideration before subjecting the muscle to entire division.

An incomplete fistula communicating with the gut only—a *blind internal fistula*—is now and then encountered, but it is probably more frequently overlooked. When a slightly painful lump, varying from time to time in size and degree of tenderness, has existed for any length of time in the vicinity of the anus, this condition of things is to be suspected; and further examination will probably justify an external incision, and a subsequent operation for radical cure.

The complete fistula, where the opening into the gut is wanting—the *blind external fistula*—is also exceptional, but less so. The fact that the sinus so often pursues a tortuous course through the fibers of the sphincter muscle will explain, in most instances, any difficulty that may be encountered in carrying the probe through into the rectum, and also the greater success which attends the operation when the patient is under the relaxing influence of an anæsthetic. If, however, after searching carefully in the proper locality for the internal opening, the denuded mucous membrane of the rectum alone is found to intervene between the finger in the rectum and the probe, and if you still fail to discover the orifice of communication, you need not hesitate to puncture

sphincter, had been removed for cancer—now under observation—even to the slight prolapse. As I saw no ground for operative interference, I advised palliative means, and wearing a small plug of oakum molded to the part. This case, in which the insufficiency was of twenty years' duration, shows how much Nature can do in the way of conservatism.

the membrane and treat the fistula as complete. The old rule, that the operation will not be successful unless the internal opening of the fistula has been discovered and included in the tissues divided by the knife, no longer holds good under these circumstances. A sinus may extend upward alongside of the rectum for several inches, and yet the true communication with its cavity will be found not at the upper termination of the sinus but just above the external sphincter; and, if the director be passed through this opening, and the operation completed upon it, the freedom of the depending opening thus established will effect the consolidation of the undivided sinus above. There is nothing to be gained, therefore, by searching for an opening into the bowel at the end of a long fistulous track; if an opening exists there, which is rarely the case, it would be unsafe to make use of it in incising the whole track, and experience has taught us that the true opening lies within a shorter and safer distance of the anus, and that the disease can be cured by a less extensive and dangerous operation.

The exaggerated dread of this disease and of the operation required for its cure results from the traditional impressions still lingering in the popular mind as to its grave character and the severity and danger of the operation—derived from the extravagant and erroneous ideas which prevailed concerning it before the middle of the last century. Fistula in ano was then regarded as an essential and progressive disease, not very dissimilar to cancer—the “scirrhus” hardness around the old sinuses and the absence of any tendency to spontaneous cure favoring this idea; and

it was to be thoroughly extirpated by the knife, no matter how extensive the incisions necessary to carry out this purpose. We still hear hospital patients from the old country speak of "cutting out the fistula," and I have been asked, more than once after an operation, if I was "sure it was all out." *

This false conception of the nature and treatment of the disease was first exposed by the eminent English surgeon, Percival Pott, with whose name you are familiar in connection with disease of the vertebral bodies. About the year 1765 Mr. Pott set forth, in the lucid and able style that characterizes all his writings, the true pathology and mode of cure of fistula; and we are still guided by his opinions.†

In the "horse-shoe fistula," where there are several orifices opening externally on opposite sides of the anus, with a common cavity behind the lower end of the gut and partially encircling it, which communicates with the interior of the gut by but one orifice, I would expose the cavity by a free incision, including the internal orifice and the whole thickness of the sphincter on one side only; and then, by keeping the remaining fistulæ provided with drainage-tubes carried well up to the cavity, I should expect to get them to heal, under the influence of the quiescence

* There are evidences of the old practice preserved by teachers of recent date. Syme says (*op. cit.*), "I have seen an eminent professor of surgery in Paris cut out the fistula," and he speaks of a woman under his care in hospital with recto-vaginal fistula, which followed an operation for simple fistula in which the surgeon "had cut out something and laid it on the table, since which time there had been a communication between the rectum and vagina"; and also of a gentleman who applied to him because he could not hold his feces, in whom he was shocked to find, on inspection, "no appearance of an anus, but, instead of it, a deep excavation, at the bottom of which the mucous coat of the bowel presented itself to view completely divested of the sphincter."

† *Chirurgical Works*, etc., London, 1808, vol. iii, p. 46, *et seq.*

secured by the division of the sphincter, about as soon as the main incision.

Where healing flags, after large incisions, syringing with diluted aromatic wine, compound tincture of benzoin, sulphate of zinc dissolved in mint-water, or applying undiluted balsam of Peru, have proved useful local stimulants. English surgeons give confederation of black pepper internally for this same purpose; I have preferred cubebs as less likely to annoy the stomach, and I think with advantage. Change of air, and, where it is possible, a sea-voyage, has a remarkable influence in exciting the reparative energy when it tends to fail.

For fistulæ of deeper origin than the ischio-rectal fossa, those arising from abscess above the levator ani have been cured by systematic drainage. After recognizing the character of such a fistula by the symptoms I have laid down, persevering efforts should be made to reach the cavity above so as to carry a drainage-tube fairly into it. After this, careful and persistent dressing and remedies to improve the general health promise a good result. Richet reports a cure effected in this way in an actress whose engagements did not permit her to submit to confinement.

There are also cases reported * of cure by the use of an instrument originally devised for deep fistulæ by Gerdy, with two arms united at one end by a screw, by means of which they can be approximated, like the enterotome of Dupuytren, and acting on the same principle. One of the arms being introduced through the fistula to the upper cavity, the other is placed in the rectum, and the intervening tissues are compressed

* By Pozzi, in his inaugural thesis already cited.

by the screw, which is daily tightened until the section is completed. It is claimed for this instrument that it avoids the danger of bleeding, which, in so extensive a section, might be serious; that it does not open the peritoneal cavity, even if included in the bight of the instrument; and that it gives free vent to any cavity at the source of the fistula. But, although efficient, its action is necessarily painful, and its use would only be justifiable after failure of cure by drainage.

For fistula near the anus, kept up by the presence of dead bone, the only cure is to seek out and remove its cause. Local treatment might prove worse than useless.

If I have been prolix in my remarks upon this malady, it must be my apology that you will, most probably, be often consulted in regard to it; and, of all surgical diseases, it is that of which the family physician is most frequently compelled to undertake the cure. I have, therefore, felt desirous that you should become familiar with its treatment, and the principles upon which the details of that treatment are based.

LECTURE VII.

FISSURE, OR IRRITABLE ULCER, OF THE ANUS.

THERE is no disease to which humanity is liable—certainly none so insignificant in extent—which is capable of causing more intolerable suffering than the ailment generally known as *fissure of the anus*. It is more properly styled an *irritable ulcer*, for this designation describes accurately the true pathological nature of the disease. The ulcer originates in a fissure or crack in the delicate integument lining the orifice of the anus, or, to speak with greater exactness, in the integument just about assuming the character of mucous membrane which lines that portion of the rectum embraced by the sphincter ani muscle. Doubtless there are cracks and fissures occurring frequently in this exposed locality, under the influence of costiveness and violent stretching, which get well promptly without their existence having been suspected; and others again which last a longer or a shorter time, and give but little trouble. But, in certain conditions of the system, and where, under the necessity imposed by habitual constipation, this forcible distention is repeated daily, the fissure fails to heal promptly; and then, as under similar circumstances of constantly repeated mechanical irritation, an unhealthy condition

is begotten in the little wound thus balked in its effort at repair, and this effort gradually diminishes, and finally ceases entirely. The solution of continuity, or ulcer, as it is now, being still exposed to constantly recurring mechanical violence and to the contact of chemically irritating substances, is kept thus in an actively excited condition, and soon puts on all the features of an "irritable ulcer." If examined at this time, it presents to the eye an appearance which resembles not a little that of a simple or soft chancre. It can be brought into view without much difficulty if you carefully press apart the margins of the anal orifice—certainly the lower portion of the ulcer, for its shape is generally elongated and narrow, from that of the fissure in which it took its origin—and you will find it situated more frequently, but not necessarily, upon the posterior wall of the outlet of the bowel, toward the coccyx.

This disease occurs in both sexes, oftener, according to my experience, in women; most frequently, also, in the earlier portion of middle life, and in persons of an irritable or sensitive nervous system. It can scarcely be called a common ailment, but I suspect that it not unfrequently escapes recognition under the somewhat vague title of "neuralgia"; but of this I will speak later.*

* Gosselin says that fissure is rare in infants, the superficial erosions of erythema being often mistaken for it. He has also observed it more frequently in women than in men, occurring in the former often after vaginitis and after confinement. Here the discharges from the vagina predispose to an inflammatory condition of the integument at the anus, which takes the form of herpes or erythema, in the erosions following which, according to this authority, fissure often takes its origin. The greater liability of the sex to constipation and the fact that the integument is thinner and more easily lacerated also explain why fissure is more common in women than in men. (*Op. cit.*, vol. ii, art. "Anus.")

The pathognomonic indication of the irritable ulcer of the rectum is the peculiar and intolerable character of the pain which attends it; and this is singularly out of proportion to the extent of the lesion—of which it is the solitary symptom. To such an extent is this true that the sufferer, when the nature of his case is explained to him, is not unfrequently loath to believe that his exquisite tortures are the result of so insignificant a cause. If I am not mistaken, the surgeon also, until he has cured his first case, will share this feeling of doubt in some degree. But the employment of a remedy by which the character of the ulcer is changed is followed by such prompt relief to the pain—in fact, by its absolute extinction—that no doubt remains as to its cause; and happily we possess the power of effecting this result instantaneously, and with equal safety and certainty.

You will be naturally anxious to know how to recognize an affection for which there is so prompt a remedy, and this knowledge is gained by observing the periodical character of the pain and the manner in which its paroxysms are produced—for it is paroxysmal in its occurrence, and at times the patient is entirely free from suffering. You will find that the pain invariably follows the act of defecation; either immediately or after a short interval. In the act itself, the pain is not necessarily severe—it may be confined to a moderate sensation of smarting or burning; but shortly afterward the peculiar, unbearable, tormenting pain which characterizes the disease comes on, and continues without cessation for a period which varies, in different cases, from two to fifteen or twenty hours. It then goes off entirely, except in rare cases,

to return inevitably with the next movement of the bowels.

The pain, while it lasts, is not lancinating nor aching, nor is it so very severe as to cause outcry or to affect the pulse; but it is a dull, gnawing, excessively distressing sensation, located just within the orifice of the anus, which entirely unfits the sufferer for any occupation, and for which there is no palliation short of opium or an anæsthetic. The fear of reproducing it leads the patient to put off the calls of nature; and this irregularity, together with the use of anodynes, perhaps, and the shattering influence of the constantly recurring paroxysms of pain upon the nervous system, lead to disordered digestion and deterioration of the general health.

When a patient complains of symptoms like these, you should proceed to examine the painful part, for you can promise relief; and, by carefully pulling apart the margins of the anus and unfolding its wrinkles in a good light, asking the patient to bear down at the same time, you will pretty certainly bring the lower end of the ulcer within sight, and the diagnosis is thus made. If anæsthesia is asked for, give it, but with the understanding that, if the ulcer is found, the means of cure shall be employed at the same time.

It happens, not unfrequently, that a person who has been for some time conscious of a protrusion at stool, attended by bleeding, is attacked by acute pains when the bowels act, and continuing for some time afterward—pain of the sort I have just described. Here, if you carefully inspect the protruded parts, you will detect one or more recently formed fissures occupying the clefts between internal hæmor-

rhoidal tumors, and extending downward toward the verge. This complication of fissure and internal piles, which is by no means rare, is due to the defective nutrition of the affected membrane, through habitual varicose congestion, by which it is rendered easily lacerable. Such cases do not readily get well, and both diseases should be cured at the same time and at the same operation.

Do not confound in your minds the irritable ulcer just within the verge of the anus, which we are now studying, with what is usually called *ulcer of the rectum*, located above the sphincters, which I shall speak of hereafter as a distinct affection. The characteristics of the irritable ulcer are so distinct and peculiar as to individualize this malady and give it a physiognomy which, with a fair degree of care, will insure its recognition.*

* I am in the habit of relying upon the characteristic paroxysmal pain as the distinguishing mark of the irritable ulcer following fissure, and rarely fail to find an ulcer in that portion of the rectum grasped by the sphincter when I come to examine the seat of pain; in fact, I can not call to mind an instance in which the characteristic pain has been distinctly well marked where I have not found an ulcer, and almost always elongated in shape and more or less completely within the bight of the muscle. But there is evidence which suggests that my experience in this matter may not be final. Esmarch says that the ulcer, in *after Krampf*, is situated, in rare cases, above the internal sphincter (*op. cit.*). Mayo has a case of ulcer of many months' standing, which he describes as "a small transverse fissure on the lining membrane at the back part of the bowel immediately within the sphincter." He does not mention the peculiar pain of irritable ulcer, but his description is suggestive of it, and he praises nitrate of silver and mild mercurial ointments, with simultaneous division of the ulcer and the sphincter muscle as a last resource. Mayo has several such cases from laceration by straining during defecation, but does not describe the typical irritable ulcer in the usual locality (*Observations on Injuries and Diseases of the Rectum*, by Herbert Mayo, F. R. S., Surgeon to Middlesex Hospital, London, 1833). Bushe has similar cases to those of Mayo, whose views he seems to adopt, but he is not clear as to the presence of the peculiar pain (*A Treatise on the Malformations, Injuries, and Diseases of the Rectum and Anus*, by George Bushe, M. D., etc., New York, 1837). Mr. Allingham makes

This disease does not tend to get well spontaneously; neither time, nor change of air, nor general treatment, however skillfully applied, seems capable of curing it. I once saw a case in its fifth year, and the patient was a confirmed invalid—from this cause alone. In a young married lady from the West, who was sent to me some years ago, the severe and long-continued suffering she had experienced had led to the suspicion that she was the victim of cancerous disease; and the sallowness of her complexion and a marked expression of habitual pain seemed at first to lend a probability to this opinion—which she had received from a respectable source. But a digital exploration failed to detect the presence of any of the peculiar induration of the tissues by which cancer is characterized; on the contrary, the parts had a perfectly natural and healthy feel, except at a point just within the orifice, posteriorly, where the finger recognized a slight roughness and excavation, and its con-

the following general statement in reference to this question without illustrative cases: "The symptoms and treatment do not differ, whatever form the ulcer assumes, whether it be elongated and club-shaped, oval, or circular, but as a rule the small circular ulcer is situated higher up the bowel than fissures are, which generally extend to the junction of the mucous membrane with the skin, the ulcer being more commonly found above or about the lower edge of the internal sphincter ani. I think, also, that in the circular ulcer there is less severe pain at the moment of defecation, but it comes on from five minutes to a quarter of an hour after that act, and then is quite as intolerable as that resulting from the fissure. These minute ulcers are more difficult to find than the fissures, as they often can not be seen without the use of a speculum, or getting the patients to strain violently, which they will not do for fear of exciting pain; in fact, they generally draw up the anus as much as they can when you are examining them. An accustomed finger detects these ulcers directly; they feel much like the internal aperture of a fistula, but the edges are harder, and therefore more defined, and there is no elevation above the surface of the surrounding mucous membrane, as is frequently the case in fistula" (third edition, Lond., 1879, p. 197).

tact elicited a pretty positive expression of sharp pain. I was assured, moreover, that the examination would be followed by pain still more intense and long continued—as she had learned by previous experience. I endeavored to compensate for this by the assurance, which the knowledge I had just acquired enabled me to make very positively, that her disease was not cancerous, and that it could be cured completely and certainly within a week—which result was happily accomplished. As to the mode of invasion and previous history of the disease, I learned that the poor lady, immediately after her marriage, had much difficulty in securing privacy and opportunity to attend to the calls of nature, and, through false delicacy, did not assert her rights, so that quite a mass of hardened *faeces* accumulated in the rectum, and, when she finally secured a chance, she “tore herself” in getting rid of it; that the “torn place,” she thought, had never healed, and was the cause of her present disease and suffering; that she had gone without a passage from the bowels always as long as she could, sometimes as long as a fortnight, and had found that a dose of castor-oil rendered the suffering, which always followed a stool, perhaps a little less, but that it lasted the best part of twenty-four hours invariably, unless she took laudanum, which she usually did. This case will serve to illustrate the mode of origin and subsequent history of irritable ulcer of the rectum, and to show also the amount of distress it may occasion, and the possibilities in the shape of permanent invalidism to which it may lead.

The explanation of the very severe pain by which this disease is characterized is found in the persist-

ent pinching and kneading inflicted upon the sensitive sore by the successive and unremitting contractions of the fasciculi of ultimate muscular fibers upon which it is immediately situated. These, by reflex irritation, are thrown into a state of unnatural contractile activity as often as violence is offered to the surface of the ulcer by the contact of irritating matters in the act of defecation.* It is not the whole sphincter muscle which acts at once by spasmodic contractions, but only certain bundles of its ultimate fibers, and those which are in immediate relation with the little ulcer; and these, in accordance with the normal mode of contractility of the muscular fiber, continue to contract and relax alternately and unremittingly as long as the reflex irritation persists. Hence the teasing character of the pain. With this knowledge we can understand how division of the sphincter ani muscle, as first practiced by the French surgeon Boyer, so promptly cured the disease, which before his day had been vainly met by ineffectual

* The following case is related by Marshall Hall in his lectures (published in the *Lond. Med. Gaz.*, 1837-'38, vol. ii, p. 388) as an example of *reflex irritation*: "In one case the sphincter ani was so contracted that the finger could scarcely be introduced or the feces extruded. On passing the catheter, it was found that a calculus was fixed in the urethra near the *cervix vesicæ*. The stricture at the anus ceased when this was removed. This stricture depended upon the excito-motor property." Irritation in the urethra excited muscular contractions in the sphincter ani just as, in other instances, a ligature applied to internal hæmorrhoids sometimes induces retention of urine by reflex action upon the voluntary muscles which act upon the membranous urethra—what we call the "cut-off" muscle. In the following case, which came under my notice recently, in which paresis of the cord was present, there was a curious absence of reflex excitability. Mr. —, of Illinois, applied for advice with partial paralysis of the lower extremities from syphilitic disease of the cord. I had occasion to examine the anus, and found a typical fissure, looking like an indolent ulcer, spindle-shaped, smooth, with no granulations, rather pale than red, with little or no elevation of edges, and so perfectly painless that the patient was not aware of its existence.

measures, and why this operation was for a long time regarded as its only certain and appropriate remedy. But the English surgeons found that a less extensive application of the knife was equally efficient in bringing about a cure; that the simple division of the mucous membrane through the center of the ulcer, including the superficial layer of muscular fibers immediately beneath it, was sufficient to secure a successful result. And, through the explanation I have just given you, we can also understand why this operation, which at present receives the sanction of the best authorities, so promptly arrests the peculiar pain of the disease, and is followed by rapid healing of the ulcer—because it cuts short the morbid contractile action in the contiguous muscular fibers.*

In the original operation of Boyer not only the whole of the sphincter was included in the incision, but a large bougie was inserted through the anus and charpie packed tightly in around it and crowded into the bottom of the incision, and dressed daily after the fourth day, so as to secure healing by granulation. This course was justified by the idea, prevalent at

* According to Mr. Curling (*Operations on the Diseases of the Rectum*, fourth edition, London, 1876, p. 11), Dupuytren practiced a slighter incision than the operation performed by Boyer, and the late Mr. Copeland was content to make only a simple superficial incision through the base of the ulcer. "In describing the operation to me, this excellent practical surgeon spoke of it as merely a division of the mucous membrane. I am convinced that on this point he is in error; at any rate, this is not sufficient; and that, however slight and superficial the incision may be, a few, at least, of the fibers of the sphincter must be divided. I had occasion to examine the rectum of a lady suffering from this affection, while she was under the influence of chloroform; and, the parts being very lax and in a good light, I was able to bring the ulcer well into view, and could distinctly perceive the fibers of the sphincter forming the bottom of the sore. Now, it is clear that, in such a case, or in an ulcer which has destroyed the mucous surface, an incision through the base of the sore must reach and divide muscular fibers."

that time, that spasm of the sphincter was the essence of the disease, and a permanent diminution of its power was necessary for a cure. In his original communication on this subject (v. *Journal complémentaire du Dictionnaire des Sciences Med.*, November, 1818) it is stated that he divided the sphincter completely—in some cases on both sides. Boyer says that he has “seen a woman in whom a febrile exacerbation succeeded every stool,” and speaks of two cases of spasmodic contraction of the anus which he considered *congenital*.

There is also a simple manœuvre in which the knife is entirely dispensed with, which will cure this disease with equal promptness and certainty—the *forcible dilatation* of the sphincter ani muscle, first proposed by Recamier, of Paris, once the rival of Dupuytren, at the Hôtel Dieu.* This may be most

* Recamier's original proposal was to practice *massage*, or kneading, upon the sphincter in this disease, with the view of diminishing its power of spasmodic contraction, which he considered the real cause of the extreme pain. The kneading or pinching of the muscle was accomplished, according to his method, by first one and then two fingers in the rectum and the thumb outside, and it was to be applied to all parts of the muscle, and to be continued for some time and repeated indefinitely, and always with a certain measured rhythm in the action of the thumb and fingers—justifying the name by which he designated the proceeding, *massage cadencé*. This method of cure, which had proved effective, was communicated to the Academy of Medicine of Paris in 1829, and, although Recamier had much reputation at this time, his proposition was regarded as fanciful, and it fell dead. Nearly twenty years later, Maisonneuve, one of his successors at Hôtel Dieu, having seen it successfully employed by its originator, revived the proposition of Recamier, recognizing that, although tedious and fanciful, it had the power of curing, and that this lay in the temporary stretching or paralyzing of the sphincter. He proposed to effect this result in a more rapid and effectual manner by introducing into the anus first the index-finger, then the medius alongside of it, then the others, and finally the whole hand; when this was accomplished, he closed his fist and then withdrew it by main force. This somewhat brutal proceeding, effected without anæsthesia, although it really cured a most persistent and painful disease, was received with as much disfavor as the original method of Recamier.

readily accomplished by introducing both thumbs well beyond the external sphincter, back to back; then, taking a purchase from the buttocks with the outspread fingers, carry the thumbs gently and slowly but forcibly apart until their palmar surfaces are arrested by the ischial tuberosities.

Or, as preferred by some, a mechanical instrument may be employed for the purpose—one of the numerous specula ani, the blades of which are separated by means of screw-power—like that of Weiss, of London, for example; but I find the thumbs answer best.

Syme, of Edinburgh, used a speculum to bring the little ulcer into view, and at the same time to put the parts on the stretch, and then, while the anal orifice was thus distended, he incised the surface of the ulcer in the direction of its greatest length—

I have little doubt that much of the existing prejudice against forcible dilatation of the anus as a remedial measure has been derived from the unfortunate methods by which it was originally effected. Maisonneuve subsequently modified his method of dilatation, using the two index-fingers only, under chloroform. He says (in his *Clinique Chirurgicale*, t. ii, Paris, 1864, p. 500) that he has employed this operation more than 150 times, that it is the best mode of curing fissure of the anus, and, when properly done, always cures, and never does harm. Four fifths of his operations were upon women. In only five or six of his 150 cases was he compelled to repeat the operation, because it had not been done thoroughly the first time. My attention was called to its curative power many years ago by my friend and colleague Prof. Metcalfe, who had seen recent evidence of its value while a student in Paris. I adopted it, employing a simple method which, by the aid of an anæsthetic, was rendered easy of execution, and entirely effective. I found the remedy a good one, and that it inflicted no permanent injury whatever on the retentive power of the sphincter, and presented a report of cases, in which I had successfully employed it in the cure of irritable ulcer, to the New York Academy of Medicine in 1863 (v. *Transactions of the New York Academy of Medicine*, vol. ii, p. 180-222, New York, 1864). I have since habitually used forcible dilatation as a preliminary measure in operating upon hæmorrhoids, with great advantage, and also in exploration of the rectum.

which is almost always parallel with the long diameter of the gut, so that the edge of the knife crosses the tense fibers of the sphincter at right angles; and some of these require to be divided, as well as the mucous membrane upon which the ulcer is seated, in order to insure the success of the operation. I say some of the fibers of the sphincter immediately underlying the ulcer must be cut; but this is not absolutely necessary if the stretching is carried far enough to temporarily paralyze them, and thus annihilate their contractile power for a few days. Any measure, in short, that will accomplish this latter object will at once arrest the agonizing pain which characterizes the disease, and the ulcer will straightway take on healthy reparative action, and cicatrize without further interference.

I have employed the manœuvre of forcible dilatation of the anus for twenty years in the cure of irritable ulcer in cases of long standing, where its edges were hard and prominent, as well as in those of more recent formation, and it has rarely disappointed me. At first I occasionally had recourse to the knife when anxious for absolute certainty, but I have gradually acquired equal confidence in its bloodless substitute. On one occasion I did it without an anæsthetic, in the case of a gentleman who was compelled to leave the city within a few hours. He had called to consult me for great pain in and after defecation, of long standing, having no idea of its cause. When, on examination, I found the lower end of an ulcer in sight, and told him that I could cure his malady with almost absolute certainty, and without preventing his departure, he demanded the remedy at once, insist-

ing that he could bear the pain, which, I told him, would be very severe. It was so; and, although the manœuvre was entirely successful, I decided, thereafter, to advise the knife in a similar case where an anæsthetic could not be used.

I have ascribed the efficacy of forcible dilatation of the anus in this disease to the temporary paralysis that follows it from the overstretching of muscular fibers, and the consequent arrest of their power to contract spasmodically, whereby the ulcer is left at rest, and consequently begins to heal at once, and loses its morbid sensitiveness. The latter fact I have verified in several instances, notably in a lady under the care of my friend Dr. Emmet, for uterine disease, who was subjected a second time to anæsthesia for a uterine operation on the fourth day after I had stretched the sphincter for an angry-looking, canoe-shaped ulcer, with hard, raised edges, and a grayish, unhealthy-looking bottom; I took the opportunity to inspect the rectal ulcer, and was surprised to find that its edges had already become soft and shelving, and its surface covered by pinkish, healthy granulations. There was a trifling ecchymosis about the anus, and the latter was still a little relaxed, but the patient had had a painless stool for the first time in several years on each day since the stretching, and had suffered no inconvenience, locally, whatever. In this case the great alteration in the appearance of the ulcer made it easy to understand why its exquisite sensitiveness had gone. Now, it is possible that the stretching of the nerves of the part had some influence in effecting this remarkable change of sensibility, for we have recent evidence that forcible stretching

of large nervous trunks—of the sciatic, for example—will entirely arrest severe pain—as of sciatica—with out serious disturbance of function. The lower end of the bowel is remarkable for its extreme sensibility, and the external sphincter is traversed by an unusual number of nervous branches derived from no less than three different sources. During forcible dilatation, these nerves must be severely stretched, some of them possibly ruptured. If this nerve-stretching prove to be a factor of importance, it will tend to enhance the value of forcible dilatation, and add to the interest of this operation—perhaps mitigate the prejudice with which it has been regarded.

You may use the knife, then, or you may dilate—with the thumbs or an instrument—or you may combine the two, as in the operation performed by Syme which I have just described, and by either of these modes of operating you will obtain a successful result; but remember, if you please, that to accomplish this object it is never necessary to divide the sphincter entirely, as in Boyer's operation. To the French surgeon belongs the credit of first pointing out a certain cure for this troublesome disease—which had been imperfectly described by Abucasis, Sabatier, Lemonnier, and others—but no prompt and satisfactory remedy was known for it before Boyer's day. His operation, however, was unnecessarily severe, and, like many other original operations, it has been very much improved; the pathology of the disease, also, as well as the mode in which its cure is effected, I think I may say, is now more thoroughly understood.

Boyer asserts that fissure of the anus is not so rare

a disease as is generally stated by authors, and that he had treated more than a hundred cases, but that he had never seen it in a child.* Now, I have seen several cases of unmistakable fissure in children, some of which got well without operation under the influence of the greater activity of the reparative force that belongs to this period of life, and others degenerated into chronic irritable ulcers, requiring suspension of the contractility of the sphincter for their cure.

Irritable ulcer of the anus is still described by most authorities as rare; but I think that, perhaps, the reason for this discrepancy may be explained. I have already told you that the true nature of the disease is often overlooked, and that it is not unfrequently spoken of as "neuralgia of the anus" or "neuralgia of the sphincter ani." I know this to be true, for I have been consulted more than once for so-called "neuralgias" of this part, where, on thorough examination, I have discovered the presence of a fissure or irritable ulcer, and cured the "neuralgia" at once by the means I have described. If you will excuse the digression, I would warn you against too much confidence in this expression "neuralgia," which is too often used to mean *disease*, where, in truth, it is only a synonym for *pain*—which, after all, is but a symptom of the disease, the real nature of which is still to be searched for. When you encounter this term, then, let it suggest a possible doubt as to whether it may not be employed in this loose way, and scrutinize the case closely before you accept it as one of essential *neuralgia*; for the pain to which this name is applied may prove to be only a symptom of

* *Traité des Maladies Chirurgicales*, Paris, 1831, t. x, p. 133.

some undetected disease. Again, you will find, in most of the systematic works on "Diseases of the Rectum," a chapter devoted to "spasm," or "spasmodic contraction," of the sphincter ani, which is described as a painful and obstinate affection. Now, I am somewhat familiar with this complaint, and I know that it does occasionally exist as a disease *per se*, but almost always, according to my experience, in hysterical women or persons liable to suffer from nervous gout. I have also seen several well-marked cases of *spasmodic contraction of the anus*, so called, in which, on careful inspection of the part while the patients were under the influence of an anæsthetic, an ulcer or fissure has been discovered, which explained at once the true cause of the affection and indicated a certain method of cure.

I detail this personal experience in order to impress upon you what I believe to be the truth of this question, viz.: that Boyer was not very far wrong in his assertion as to the frequency of the disease, and to justify me in advising you to examine all the cases of "neuralgia" and "spasm" of the anus in which you may be consulted, if of any duration, under the influence of ether or chloroform, and with great care. I will take an opportunity to show you, on another occasion, the best method of exploring the rectum and anus for the detection of their diseases, and meanwhile will venture the opinion that the experience of the profession, with the aid of anæsthetics in diagnosis, will hereafter rather tend to confirm the assertion of Boyer as to the frequency of fissure, and also that in future we shall hear less of neuralgia and spasm of the anus.

In regard to the manœuvre of *forcible dilatation*, I have found it useful in curing painful spasm of the sphincter ani, even where no ulcer could be found to serve as a cause of the spasm, and, as already mentioned in describing the operation for the cure of bleeding piles, I have found that its employment renders this operation more easy of performance when an anæsthetic is used; in fact, under these circumstances, I regard it as indispensable. To secure the full amount of advantage from forced dilatation, it must be done thoroughly, and with about all the strength the surgeon can exert. Some of the muscular fibers of the sphincter may be torn across and the membrane lining the orifice somewhat abraded or lacerated, and occasionally a thrombus or ecchymosis will follow from rupture of a vein; but I have never seen any harm from these consequences of the operation. Nor does any inconvenience arise from the almost entire suspension of function of the sphincter. I have never heard of any trouble from involuntary escape of the contents of the rectum, although I do not confine my patients to bed after dilatation—the internal sphincter being, apparently, entirely reliable. This proceeding may seem to be somewhat primitive and to lack the precision and accuracy of the knife; but it is thoroughly scientific, and its practical value is established. Forcible dilatation when first applied to the cure of stricture of the urethra was opposed as a rough and unsurgical proceeding; but it has proved in practice to be a most valuable resource, finding more favor with thoughtful surgeons than the knife in the management of many cases; and I anticipate a similar verdict for the same principle em-

ployed elsewhere. Gynæcologists have recognized it as the best cure for vaginismus.

It is hardly necessary to explain more fully the manner in which this surgical manœuvre effects so prompt a cure of the chronic irritable ulcer and of the pain which it occasions. It simply does away with the cause which prevented the healing of the original fissure, viz.: the constant motion of the muscular fibers of the sphincter and in its immediate vicinity. This unceasing movement of alternate contraction and relaxation, which is continually going on, under the stimulus of reflex nervous irritation, in the fasciculi of its ultimate fibers, is temporarily abolished by overstretching them. After this, there is a period of entire rest and quiet, during which Nature's process of repair, which has received an additional stimulus from the violence inflicted in the operation, speedily removes the unhealthy character of the sore and sets it to healing. The period of rest, during which the sphincter is in a condition of more or less complete atony, i. e., inability to contract, varies with the degree of force employed in stretching its fibers. It continues only a few days, but long enough to allow the ulcer to entirely change its character and to take on healthy action.

This condition of *atony*—I prefer this term, as more correct than *paralysis*—from overstretching is one of the characteristic attributes of muscular tissue; it constitutes the essence of fatigue, and explains the powerlessness that follows violent or unusual muscular effort. We see a familiar example of it in the sluggishness with which the bladder expels its contents after over-distention through delay in answering the

calls of nature. It is desirable that you should fully grasp the principle involved in this operation, for it may be applied in many other ways than for the cure of irritable ulcer of the rectum. I have had a good deal of experience in its use since 1863, when I read a paper before the Academy of Medicine calling attention to it as a remedial measure of which the value had not yet been fully recognized, and detailing cases in which it had been successfully employed. From the evidence since accumulated, through the kindness of my professional brethren, I am in a position to bear still stronger testimony in its favor; and, without having dealt with quite so many cases as Boyer, I can say, in regard to the employment of forcible dilatation of the anus as a substitute for the knife in the treatment of uncomplicated fissure, irritable ulcer, or spasmodic contraction, that, in my hands, it has never failed to bring about a cure.*

The *diagnosis* of fissure is neither easy nor certain without an examination under ether. It is not surprising that Boyer should say that he "had many times seen spasmodic contraction of the sphincter without fissure, although oftener with it." In fact, there are few things more difficult than the detection of a painful ulcer in this locality when it is not visible at the verge, unless the parts are placed at rest by an anæsthetic. The older surgeons were compelled to rely mainly on exploration by means of the finger, and, where the presence of a minute ulcer is in question, this is by no means a certain guide. Boyer set

* Gosselin says that he has failed with this remedy in three women, but never in men—for whom, as it does not interrupt their daily occupations, he considers it very much preferable to incision. (*Op. cit.*, p. 681.)

aside all doubt by applying the same remedy, whether the ulcer was present or not, so long as spasm was a prominent feature in the case. It is my practice, when the symptoms point to fissure, to advise exploration under ether, with the understanding that any operation found necessary for a cure shall be done at the same time.

I can not say that I have ever verified the existence of hypertrophy of the sphincter, even in cases of long standing, and I have rarely met with more than one fully formed irritable ulcer in the same patient, although multiple fissures are quite frequent. I once saw, in a syphilitic prostitute in the adjoining hospital, no less than five or six radiating elongated chancroids, which were evidently the result of inoculation of recent fissures by the contact of discharges from the patient's vagina. In practicing forcible dilatation in patients whose tissues were easily lacerable, I have in frequent instances produced several slight fissures; but, in consequence of the quiet secured by the manoeuvre, they have always promptly healed. Where a superficial incision is relied upon for a cure in well-marked multiple fissures, I should apply it to each one of them, but, if free division of the sphincter is employed, one incision will suffice.

The practitioner should constantly bear in mind that there are cases of feminine complaints liable to be regarded as uterine which are, in reality, due to fissure, which false delicacy prevents young women from describing accurately. In such cases, a resort to anaesthesia for exploration is of inestimable value. On the other hand, I have in many instances seen patients, while under treatment by experts for uterine

enlargement or displacement, whose complaints of tenesmus and pain after defecation and constant sense of uneasiness, persistently located in the lower bowel, seemed to justify a thorough search for rectal disease, and have often failed to find any rectal lesion whatever to which I could give a name or for which I could promise relief.* But this is not always the case: Not long ago a healthy-looking lady was brought to me in consequence of persistent complaint of pain over the sacrum, and obstinate constipation. She had some undoubted uterine symptoms, and was somewhat hysterical in temperament, and was wearing a pessary applied by an expert in uterine ailments for a "displacement" to which all her symptoms had been attributed. Her continued complaints were looked upon as probably due to hysterical hyperæsthesia. I found, I confess to my surprise, a well-marked cylindroma within three inches of the anus, which has since proved mortal.

As to the *prognosis* of simple cracks or fissures, it may be broadly stated that the vast majority of them get well, even without their existence having been suspected. In many individuals the integument in this locality chaps and cracks very readily. In more

* Mollière (*op. cit.*) suspects the existence of what he calls a "*synergie*" between the os uteri and the sphincter ani, as an explanation of this close sympathy. He says that, in a case of vesico-vaginal fistula, he has seen the anus contract each time he touched the os with the uterine sound. This author quotes no less than thirteen cases in which fissure was overlooked and the symptoms attributed to other diseases. Of these, five were other diseases of the bowel—stricture, piles, and constipation; five involved the urinary organs—stricture of the urethra, stone, "*dysurie*," and two of irritable bladder; and three, the uterus (p. 153). He quotes a case, from A. Cazenave, of retention of urine, which after some days was discovered to be due to spasm of the muscles at the membranous portion of the urethra, sympathetic with spasm of the sphincter ani caused by the presence of a fissure (p. 147).

than one instance, where the necessity of an exploration under ether has been recognized, I have noticed cracks caused by the digital examination of the day before. In nursing infants, the cracks which are so commonly caused by costiveness almost always get well under oxide of zinc ointment and a change of diet that will produce soft stools. I have never been obliged to employ a more severe measure in a child than penciling it with a solution of nitrate of silver strong enough to turn its surface white—say gr. x to ʒj. Esmarch says that only the most severe cases require more than astringents or mild stimulants, which act by dulling the nerves while granulations form. Trousseau's famous remedy of infusion of rhatany acts in this way. To facilitate the prompt healing of a crack, or as a palliative to the after-pain where an irritable ulcer has actually formed, I know of no more reliable remedy than the use of an enema of warm, or even hot, water just preceding each stool, with the addition of an ounce or two of melted vaseline or warm sweet oil just before the tube is withdrawn. The oily material sheathes the sensitive surface, while the water effectually softens and dilutes the stool. I advise the American India-rubber apparatus for injection, and have found that the vaginal tube is less liable to cause pain, and enters the anus with about as much facility as the ordinary rectal attachment—just as a small bougie often causes more pain in the urethra than a full-sized sound. This remedy, when the first repugnance to it is overcome, is more certain in its action than the laxatives usually employed for the same purpose, and is employed with more satisfaction by the patient. Of the medicines in

general use, the sulphate of soda waters—Pullna or Hanyadi Janos, largely diluted with hot water, which covers the bitter taste and facilitates the action of them—are the best; or the confection of senna, or of tamarinds with senna (*tamar indien*), or fluid extract of buckthorn, 3jss. to 3ss. of compound tincture of cardamom, or the *pil. salutis* (aloes, with nux vomica and hyoscyamus). Allingham says that he has effected many cures by the following ointment: hydrarg. subchloridi, gr. iv; pulv. opii, gr. ij; ext. belladonnæ, gr. ij; ung. sambuci, 3j: to be applied frequently.

Have we any ground for believing that a fully formed irritable ulcer ever gets well spontaneously? This result may possibly occur, but I have never seen an instance. Mollière, the latest French authority,* says that Nélaton could find no authentic record of the cure of a case without the interference of art. On the other hand, Velpeau mentions, in a clinical lecture, in 1841,† several cases which got well spontaneously—one in a medical student which had lasted seven or eight years. He thinks well of dilatation by mèches and bougies, “if we can get the patient to bear the pain,” evidently not liking the free division of the sphincter of his predecessor Boyer nor the methods of Recamier and Maisonneuve, although he recommends dilatation, “if the patient can stand the pain.” It is true that Velpeau’s treatment was in most general use at this time, more faith being accorded to the medicaments with which the mèches and bougies were smeared than to the dilatation which they effected.

Finally, as influencing prognosis as to the results of

* *Op. cit.*, p. 157.

† *Amer. Jour. Med. Sci.*, July, 1841, p. 202.

treatment, I must modify the opinions I have expressed as to the certainty of cure of fissure or irritable ulcer by the operations described, as far as they apply to women with co-existent uterine or ovarian disease. Where these complications are present, the entire relief which so commonly follows the proper treatment of hæmorrhoids, as well as of ulcer or fissure, has not always been obtained; certainly not in the same degree. The tendency to pelvic discomfort often persists, and is located in the lower bowel even after all of its discoverable disease has been apparently cured. In my experience, uterine complications not only interfere with the successful cure of these ailments, but they also favor their occurrence; hence, they so often co-exist, and, as a rule, they make unpromising cases. In cases of laceration of the perinæum coincident with enlargement of the womb, I have especially encountered exaggerated complaints of rectal uneasiness and distress; and in unmarried women the same symptoms often occur in connection with a version or flexion; and, even in the absence of any anatomical lesion, spasm of the sphincter or painful sensations simulating fissure have seemed to arise from reflex ovarian irritation, or, what is about the same thing, hysterical neuralgia. In this category of cases you will find remedies addressed to the rectal symptoms of little avail, until reëstablishment of the normal functions of the uterus and ovaries shall have renovated the general tone of the nervous system.

LECTURE VIII.

ULCER OF THE RECTUM.

I HAVE already treated of "fissure or irritable ulcer" of the anus, an affection which is *sui generis*, and of which the essential element is *fascicular* spasm of the external sphincter muscle.* The present lecture will include all the other forms of ulcer of the rectum, and also of the anus, which I have recognized, except those dependent upon cancer.

The subject of ulceration of the rectum is involved in much obscurity, in consequence, partly, of the somewhat inaccessible seat of the disease, but mainly, as it seems to me, from an indisposition to its thorough exploration. Doubtless, also, its symptoms are often mistaken for those of a medical disease, as for diarrhoea or dysentery, or attributed, without scrutiny, to "piles." In fact, it is only since systematic exploration of the rectum by the aid of anæsthetics has been possible that we have been able to make additions to our very scanty positive knowledge of this affection. The imperfect impressions received by the contact of the finger or by the eye through

* I mean by fascicular spasm, alternating contraction and relaxation of certain of its fasciculi, and not of the whole muscle, as the expression *spasm of the sphincter* would imply.

the ordinary speculum ani, which are not usually satisfactory, together with the knowledge of what pathology teaches concerning ulceration in general, have furnished the basis of most of the recorded information concerning the nature and causes of rectal ulceration.

Thus far, the following facts have been pretty clearly established: that ulceration in its various forms is not uncommon in the lower end of the rectum; that ulcerations developed in this locality, through causes arising mainly from the anatomical structure and functions of the part, do not heal promptly, and ulcers of the rectum and also of the anus tend therefore, as a rule, to become chronic. Mr. Curling heads his chapter on this subject "Chronic Ulcer of the Rectum." From the same causes, ulcers of the rectum, as a class, are very painful. Mr. Allingham emphasizes not only the "great misery" they occasion but also their incurability if neglected. It is also clearly known that certain ulcers of the rectum tend to perforate its walls and give rise to abscess and fistula, and that others extend superficially and are attended by thickening from exudation; and that, being accompanied necessarily by loss of substance, all ulcers of the rectum contract when they heal; and, finally, that cicatrizing ulceration of any considerable extent is the most common cause of narrowing, or stricture, of the caliber of the bowel. These possible consequences of rectal ulceration give great interest to everything that throws light upon its causes and nature, for they lead to rational means of cure.

To give you an idea of these causes, I have arranged them under certain heads that can be easily remembered, with evidence as to the influence of each

in giving rise to rectal ulceration. By this method of study, we shall get a knowledge of the means by which it may be prevented, when prevention is possible; and we shall also gain greater certainty in the use of remedies, which is our main object. These heads are: 1, local traumatism; 2, dysentery; 3, scrofula and tubercle; 4, chancroid; 5, syphilis; 6, cancer.

1. *Local traumatic injury* is by far the most frequent cause of rectal ulcer, as when a laceration or perforation, probably trifling in extent, is prevented from healing by the irritating contact of the fæces, by the varying volume of the bowel, and the violence inflicted by its forcible contraction in the act of defecation. Thus, abrasion has resulted from the prolonged contact of hard masses of fæces; from the presence of foreign bodies, either swallowed—as in the cases of teeth, real or false, or fragments of bone—or introduced through the anus, of which there are many strange instances; or by the contact of instruments employed to extract them or to remove masses of impacted fæces, an operation not infrequently required. Ulcer may result from failure to heal of wounds caused by surgical operations or other lesions, such as are described under the head of “Wounds of the Rectum.”

The only form of ulcer described by Mayo* (whose excellent monograph was published in 1833), from his own personal knowledge, originated in a “transverse fissure or laceration,” which occurred while straining at stool. In one instance, it was situated in the posterior wall of the gut above the sphinc-

* *Observations of Injuries and Diseases of the Rectum.* By Herbert Mayo, F. R. S., Surgeon to the Middlesex Hospital. London, 1833, p. 11.

ter, lasted many months, causing great pain, and was finally cured by free, simultaneous division of the ulcer and the sphincter muscle by the knife. Bushe says that he has seen similar cases.*

The bursting of a hæmorrhoidal vein while straining at stool is a variety of traumatism which, according to Ribes, is the most frequent source of origin of abscess and fistula, and also of ulcer in the locality occupied by internal hæmorrhoids. Such a lesion, if it should not perforate and cause abscess and fistula, would, nevertheless, like a varicose ulcer of the leg, heal very slowly, if at all, in consequence of the habitually dilated condition of the surrounding hæmorrhoidal vessels. Internal piles, as is well known, often take on inflammation from the bruising to which they are subjected, and I have often seen ulceration on the surface of the projecting tumors as well as in the clefts between them.

The lodgment of irritating particles in the *lacunæ* just above the internal sphincter was regarded by Physick as a not infrequent cause of ulceration.†

Bruising of the walls of the rectum, between the sacrum and the child's head, in protracted parturition produces in certain cases a variety of traumatism recognized as a cause of ulceration and stricture by Brodie, Curling, Allingham, Mollière, and others of the best practical authorities in rectal diseases. I had once, in my wards in the New York Hospital, a healthy, respectable woman of thirty-five, with an

* This author describes the ulcer in question as "caused by the forcible extrusion of a fold of mucous membrane, which, lapping under the mass of indurated feces," is forcibly dragged down, everted, and torn across. (*Op. cit.*, p. 69.)

† *American Cyc. of Pract. Med. and Surg.*, art. "Anus." Phila., 1836.

extensive surface ulceration surrounding the gut for two or three inches above the sphincter, which followed a long, hard labor. The ulceration finally got well, but its cicatrization resulted in the formation of a stricture. This case left in my mind a very strong impression that the constant liability to injury sustained in this way must go far toward explaining the greater frequency of ulceration and stricture of the rectum in women. This impression has since been confirmed by similar instances.* While it is difficult to demonstrate its absolute truth, I feel warranted in asking you to regard this source of traumatism as a not uncommon cause of rectal disease in the sex, and as a reason why women are so much more frequently the subjects of these diseases than men. While a healthy woman would soon recover from the bruising of the rectum, as of other parts damaged in a prolonged first labor, a delicate, strumous, or syphilitic subject might suffer from retarded repair and its consequences, in the way of chronic ulceration or stricture, after such an ordeal. There are some defective constitutions in which any traumatism, however trivial, is liable to become the starting-point of serious disease.†

* In his *Lectures on Diseases of the Rectum* (*op. cit.*, p. 236) Sir Benjamin Brodie describes a condition of the rectum liable to occur in women, most frequently after difficult labor characterized by chronic inflammation, a copious discharge of mucus and pus, and frequent and painful passages. "If you examine the bowel with the finger," he says, "you find the inner surface of the mucous membrane irregular, as if it were lined with a multitude of small, flat excrescences, or as if your finger came in contact with a surface covered with warts." It is generally accompanied by a circular contraction or stricture an inch and a half or two inches above the anus—"which," he adds, "is an accidental and not a necessary accompaniment of the disease."

† Godebert's case, recorded under syphilitic ulcers, is of interest in this connection.

2. *Dysentery*.—It may be assumed that ulcers form in the rectum in the same way as the gastric ulcers of young women, or the ulceration of the duodenum after a surface burn, or from any of the causes of ulcer in other portions of the intestinal canal. Rokitsanski suggests the softening of small tumors in the wall of the bowel. Esmarch asserts that ulcer with loss of substance, of unknown origin, may occur, and cause perforation and peritonitis. It is well known that perforating ulcers take their origin in the intestinal glands in the intense congestion attending the effort to eliminate a blood poison, as in typhoid fever. Dysentery, which is usually regarded as the result of a blood poison, must be a comparatively rare cause of rectal ulcer, or this disease would be far more common than it is, especially in warm countries, where dysentery is so prevalent; and yet cases of ulcer from this cause are mentioned by the best authorities. Thus, Cruveilhier, in his pathological atlas,* has a plate of what he calls a "dysenteric ulcer" of the rectum, taken from the dead body of a young woman of twenty, which is surrounded by a thickened margin, and is already producing stricture. Allingham mentions one or two cases of stricture originating in dysenteric ulcer, but in persons from the tropics. Prof. Annandale, of Edinburgh, reports a case† of diarrhoea of three years' duration, in a medical officer of rank long a resident of India, cured by the surgical treatment of an ulcer which he discovered in the rectum an inch above the anus; it was as large as a dime, with depressed center and indurated borders, and not very painful to the touch.

* *Livraison*, xxiii, pl. 1.† *British Med. Jour.*, p. 681, Dec. 21, 1872.

The patient had from four to six soft stools a day, and had not had a "formed" stool for three years. Admitting that there are some cases, beyond a doubt, of rectal ulcer from dysentery, I must call your attention to the conclusion in this case: the looseness of the bowels, "which had resisted many remedies, ceased promptly after the cure of the ulcer," which was effected, with some delay, by incising it freely, and keeping the patient on a milk diet; and both the surgeon and his patient were firmly convinced that "the ulcer was the cause of the dysenteric symptoms from the beginning."

Now the term dysentery is very generally applied to cases of frequent stools accompanied by tenesmus; and frequent stools with pain are also the prominent symptom of the disease we are studying; so that an ulcer of the rectum may have been simulating diarrhoea or dysentery for an indefinite time, and, when finally discovered on local exploration, may be wrongly ascribed to the preceding dysentery, as in Mr. Anandale's case, where the ulcer had been, from the first, the cause of the symptoms. I remember the report of a case of stricture in a woman of thirty-three, operated on in a Parisian hospital, which terminated fatally in a month after the operation, in consequence of rapid tubercular infiltration of the lungs. The case was headed "Dysenteric Stricture," and it was distinctly stated in its history that the stricture followed a dysentery of a year's duration, during which time she had twenty bloody stools a day. As such steadily obstinate dysentery is not common in France, I suspect, in view of the cause of death, that the so-called dysentery may have been

really due to tubercular ulceration, which eventually resulted in stricture.*

3. *Scrofula and tubercle*—terms significant of defective nutrition and power of repair, and also of the deposit—by preference, in the glands—of a peculiar substance known as tubercular matter—are undoubtedly the causes of a large proportion of rectal ulcers. They act in two ways: either in retarding the healing of a local traumatism, which thus becomes a chronic ulcer, or as a directly exciting cause of ulceration, as when tubercular deposit actually takes place in and around the glandular follicles of the rectum and provokes suppuration. Tubercular granules have been seen, by the aid of the microscope, imbedded in the granulation tissue which constitutes the surface of the ulcer, and also blocking up the vessels which should supply these granulations with blood.†

In the disease known as *tubercular diarrhœa*, small round ulcers with rather sharply cut edges, taking their origin in the manner just described, are found in all parts of the intestinal canal. A gentleman from the West, with reddish-brown hair and eyes, and a history of chest symptoms earlier in life, lately consulted me for frequent bloody stools, with the idea that his disease was in the rectum. I discovered, on examining the bowel, only some trifling erosions, with intense general redness of its surface; but in more advanced cases of this nature well-marked ulcers are found in the rectum. Habershon, in his recent work on diseases of the abdomen, gives the post-mortem

* Reported by a house surgeon of M. Cusco in *Bull. Soc. Anat.*, 1876, p. 684.

† Malassez, *Bull. Soc. Anat.*, Paris, 1871, p. 12.

appearances in several such instances of fatal tubercular disease.* These are hopeless medical cases, cited to give you a broad conception of tubercle as a cause of rectal ulcer; but there are many cases, not properly called tubercular diarrhœa, where ulceration exists in the rectum alone, and where healing is delayed by the presence of the scrofulous vice in the system, in which surgery may afford valuable aid.

Mr. Curling reports the case of a sea captain, with tubercular deposit in both testicles, who complained of severe scalding pain lasting about ten minutes

* One case is headed "Phthisis, Ulceration of the Rectum and Sigmoid Flexure, Hæmorrhage from the Bowels." An adult; cause of death: discharge of blood from rectum, with diarrhœa. Inspection: tubercles in both lungs and larynx. In lower part of ileum, a few tubercles and commencing ulceration. The transverse colon presented several ulcers, oval in form, half an inch in breadth, with indurated, irregular margins. In the sigmoid flexure and rectum, the whole of the mucous membrane was affected; it was almost covered with patches of ulceration, and in some parts there were portions of adherent diphtheritic membrane.

A man was cured of fistula by Robert, at the Beaujon hospital, in Paris, by operation. After a time he returned to the hospital with consumption, and died. At the autopsy, besides tubercles of the lungs and mesentery, several ulcerations were found in the rectum, evidently produced by tubercles occupying the submucous cellular tissue, some of which communicated with small collections of tubercular matter, which could be taken up on the scalpel. Some of the lacunæ were also enlarged. (*Am. Jour. Med. Sci.*, January, 1844, from *L'Expérience*.)

Esmarch says of tubercular ulcers of the rectum that they are rarely primary; that they may take their origin in simple follicular ulceration following dysentery, or catarrhal inflammation, or in suppuration of extravasations of blood due to coughing, or in cheesy degeneration of the follicles around which, when they ulcerate, a new deposit of tubercle takes place, forming the "scrofulous ulcer." He adds that the form of the latter seems to be dependent on the original character of the pulmonary phthisis. (*Op. cit.*, p. 84.)

Bardeleben (*ut supra*) describes tubercular ulcers as both superficial and deep. The latter sometimes result from softening and ulceration of cheesy deposits. They may extend deeply or by surface spreading, may perforate and cause fistula or spread upward to the peritonæum, seldom cicatrizing, causing death by septic infection, exhaustion, or pulmonary tuberculosis.

after an evacuation, with a little blood in his motions, and a constant slight discharge. He found, on examination, at a short distance within the bowel, an ulcer the size of a half-dollar, with indurated edges, its lower part being within the circle of the sphincter. This ulcer was cured in about a month.

In a married woman of twenty-five, with scars in the neck from strumous disease, he discovered extensive ulceration of the bowel, which he describes as "an irregular surface, in parts rugged and hard, and at some points exquisitely tender." This woman improved under treatment, but very slowly; and, as the ulcer healed, he discovered about two inches from the anus a distinct contraction which was being produced by the cicatrization of the ulcer.

Dr. Adams, of Putnam County, lately brought to me a young engineer who, two months before, had fallen in a sitting position upon an upright iron rod an inch in diameter, which penetrated the anus, as was estimated, nearly two inches. He did very well for three weeks, but had since then ceased to improve. There was a discharge of pus with the stools, and a complaint of pain referred to the neck of the bladder. I found an ulcer in the anterior wall of the rectum over the prostate, about an inch and a half from the verge. Its edges were sharply cut, and there was no appearance of healing. The patient had a delicate aspect and a history of former chest symptoms. I advised cod-liver oil and change of air.

When we call to mind the prompt recovery recorded as following very extensive traumatic lesions in vigorous subjects, the influence of a strumous di-

athesis in arresting repair in a case like this is not difficult to recognize.*

Tubercular ulcers are not rare at the anus, where they often produce small fistulæ. I have already alluded to the minute indolent "dermoid" abscesses in which they take their origin. Within the rectum they are ordinarily multiple, commencing in the follicles; their tendency is to become confluent and encircle the gut in broad bands with borders infiltrated by tubercular matter, and to result, when they heal, in stricture.†

The anus and rectum are occasionally the seat of persistent and destructive ulceration resembling "*lupus exedens*," which is regarded by some as a manifestation of scrofula.‡

I should infer, from my own observation, that most of the extensive and incurable cases of ulceration of the anus and rectum encountered from time

* Mollière gives the case of a man of twenty-eight, who entered the hospital with an extensive ulceration with hard, sharp edges, occupying about half the circumference of the anus, and extending an inch or more within the rectum. The patient had been healthy until four years before, when the ulcer made its appearance at the anus without any known cause. It oozed a little blood occasionally, and was but slightly painful at first, and has only given serious trouble while at stool within the last two months; and he has latterly failed in health and began to cough. The patient is now emaciated, and has dyspnoea and purulent expectoration. This man died shortly afterward; and, on inspection, cheesy tubercles were found at the summits of both lungs, with recent tubercular infiltration on the right side. Tubercular deposit in the inguinal glands. Under microscopic examination of the parts involved in the rectal ulcer, well-marked granules of tubercle were found in the infiltrated connective tissue and integument. (*Op. cit.*, p. 651.)

† Emile Vidal, *Dict. Encyc.*, art. "Rectum." Verneuil is reported as saying, at a discussion at the Surgical Society of Paris (*Bull. de la Soc. de Chirurgie*, 1873, p. 11), that the tubercular ulcers of the rectum never heal. This is, probably, too strong a statement.

‡ This form of ulcer is called by the French "*scrofulide maligne*," and is a phase of the disease of the vulva described by Huguier under the designation of "*esthiomène*" (v. "Esthiomène," *Nouveau Dict.*, t. xiv).

to time in the hospitals, and which almost resemble cancer in their hopelessness, are the result of bad habits of life in women of strumous constitution upon which syphilis has been ingrafted.

I have seen ulceration of the rectum and also of the colon as a result of *inanition* from defective nourishment in cases where there was no room for suspicion of scrofula. Vidal cites a case of a prisoner who had become lenteric from prison fare, in whom he saw numerous ulcers of the colon and rectum after death.*

Ulceration just above a stricture of the rectum is a common occurrence, as a result of habitual over-distention and exaggerated contractile efforts. It is accompanied by muscular hypertrophy of the walls of the portion of bowel which has been habitually over-stretched, and is preceded by congestion and thickening of its mucous membrane.†

* In an old gentleman of eighty, of very vigorous constitution, with excessive narrowing of the anus from infiltration and thickening of the sphincter and surrounding parts, and consequent obstruction attended by great pain, a perforating ulcer was found in the posterior wall of the rectum over the coccyx, the bones of which were found, after death, in a stercoraceous abscess. After a period of utter inability to take food, death had taken place from suddenly developed peritonitis, which was found on inspection to have been caused by another perforating ulcer of the colon higher up. There were three or four other ulcers in the colon, apparently the result of imperfect nutrition and distention.

Esmarch (*op. cit.*, p. 82) describes *follicular ulcers* resulting from chronic or follicular catarrh, and unconnected with scrofula. He says that these ulcers may run together and spread in the submucous tissue, undermine and cause sloughing of the mucous membrane, and thus give rise to large ulcers with irregular undermined edges. They are usually atonic in character, with little tendency to heal. In most cases they occur as complications of exhausting diseases, surgical operations, etc., and last, with colliquative diarrhœa, until death.

† Gosselin, in his much-quoted paper on *Syphilitic Strictures of the Rectum* (in the *Arch. Gén. de Méd.*, December, 1854, p. 666), gives the result of a good

As I have said, perforating ulcer above a stricture of the rectum is a possible occurrence. Cooke, in his edition of Morgagni, relates the case of a young lady who had been afflicted with a "scirrho-contracted rectum" for some years, and finally died of obstruction. On examining the body, he found an ulcer, large enough to admit the end of the little finger, above the stricture, leading to a large cavity, which was filled with pus and excrement, in the hollow of the sacrum.*

The very rare form of disease known as "*rodent ulcer*" sometimes attacks the anus, and extends thence into the rectum. The pathology of this peculiar affection is not entirely determined; it has been by turns regarded as a variety of cancer, of "malignant" scrofulous ulceration, and of phagedæna, and is possibly a variety of epithelioma with certain peculiarities referable to changes in the local nerve tissue hitherto unexplained. It is well to be able to recognize this formidable disease, which, from its unusual occurrence, is almost always a source of error as to prognosis, which is of the worst. It occurs in young adults as well as in middle and later life. Allingham has a case in an apparently healthy country girl

study of the walls of the rectum above a stricture, explaining the changes leading to ulcer in this locality, and applicable to cases of stricture from any cause. He found an injected and eroded mucous membrane, yielding pus freely. By erosion he means loss of epithelium and thickening by exudation of the surface beneath. Robin, who examined one of his specimens microscopically, says, "The eroded surface presents only free epithelial nuclei, with pus globules; the cells of columnar epithelium are almost entirely wanting." The muscular coat is hypertrophied *from effort*, mainly in the circular fibers; it is twice its natural thickness. These ulcerations in the gut above a stricture are uniform; they extend all around its circumference and four or five inches upward.

* *Letter XXXII*, p. 9, note.

of seventeen, and Curling in an aged medical man, who died with the disease at eighty-one. The ulcer is smooth and red, with a well-defined margin, but with no thickening of base and with but very little at the edges. It advances on the surface, exceptionally in depth, and at the anus seems to be always the seat of intolerable pain. Rodent ulcer is incurable by any form of treatment except, as in the face, by thorough and most liberal excision, practiced early. Deep cauterization may arrest its progress, and be followed by a healthy granulating surface, but only for a short time. The granulations melt away, and the peculiar pain returns inexorably. Entire and free removal, even involving the anus and lower end of the rectum, is justifiable when it can be accomplished; and, when this is not possible, colotomy may mitigate the intense suffering—always very much aggravated at stool—by which the patient is sooner or later worn out.

I have learned—mainly from uterine cases seen in consultation with my friend Dr. Emmet, in which rectal pains were a prominent feature—to recognize a red, congested, velvety surface of the rectum presenting enlarged papillæ as a result of reflex uterine or ovarian irritation. At least, these appearances have been frequently the only apparent cause of long-continued rectal distress remaining after the removal of uterine disease. In young males, also, complaining of persistent rectal pain, I have found enlarged papillæ, and even ulceration, which I have had reason to attribute to reflex prostatic irritation kept up by sexual causes. These enlarged papillæ constitute the *polyadenomata* described by Broca and Richet; and

their presence in the rectum is due, in some cases, I think, pretty certainly to the same causes which give rise to the enlarged and irritable follicles of the pharynx and the irritated sebaceous follicles so common on the face and shoulders, which disappear after marriage.*

4. Of the *venereal* diseases which cause ulceration of the rectum, syphilis should be studied apart from the "*contagious venereal ulcer*" or *chancroid*. The latter, which I shall first consider, is a purely local affection; whereas the former affects the whole organism. Much of the difference of opinion as to the causation of ulceration and stricture of the rectum by these diseases is due to the fact that the distinction between the simple local sore, chancroid, and the constitutional disease, syphilis, has been ignored, even since the different nature of these affections was demonstrated by Bassereau in 1852; and the terms *syphilitic* and *venereal* have been loosely employed as identical in meaning, even by those who have ac-

* A youth of twenty-three was brought to me in February, 1880, by Dr. D. S. Adams, of Manchester, N. H., with a history of uneasiness in the rectum, accompanied by frequent desire to go to stool, which symptoms had developed themselves gradually in the early part of the past summer. Dr. Adams discovered, on examination by the finger and speculum, a large, sensitive surface, covered thickly by papular eminences, and also two surface ulcers the size of a dime. The ulcers gradually healed, and the roughness disappeared under systematic local applications of the liq. ferri sub-sulphatis, and he was apparently cured. In three months, however, he came back with a return of his symptoms. The roughened surface had reappeared, but there were no ulcers. Dr. Adams had cut off and examined some of the little projections, and found them "full of epithelium." As his grandfather had died of cancer of the rectum and his mother of scirrhous of the breast, there seemed to be ground for apprehension for him. I was of opinion that the polyadenomata, which they evidently were, were probably the result of reflex prostatic irritability, and advised marriage, in addition to the local use of the sub-sulphate of iron which had already proved its value.

cepted the conclusions of Ricord and Bassereau, and this error I am anxious that you should avoid.*

One of the distinctive characteristics of the non-infecting ulcer, or chancroid, is its liability in exceptional cases to become chronic while still secreting pus of a poisonous quality, and another is its tendency to take on the unhealthy condition called *phagedæna*, which means an indefinite extension of the ulcerative process; and these, with the additional quality of inoculability upon any abraded surface in its neighborhood on the patient's body, which belongs only to this sore, explain how in the female, from contiguity of parts, the discharge from a chancroid, which is always abundant, may inoculate a crack or fissure at the anus. They also explain how, when reproduced in this more exposed locality, the new sores may take on the phagedænic condition in consequence of persistent local irritation, and how, traveling within the anus, they may invade the rectum. This is a recognized mode of explaining the presence of chancroidal ulceration of the rectum; but I can not help thinking that the singular facility with which rectal ulceration may be derived from auto-inoculable sores situated on the female genitals has led many to overrate the frequency

* John Hunter, one of the highest authorities among English surgeons, believed that all the venereal diseases, i. e., those diseases usually communicated in the venereal act, were due to one and the same contagious poison. Ricord, who translated the writings of Hunter on this subject into French, succeeded in demonstrating that the poison of gonorrhœa was an entirely distinct virus, and his conclusion is now universally admitted. Bassereau, subsequently, by following up hospital cases to their sources of origin, demonstrated that, of the venereal ulcers known as chancres, one was a local sore, what we now call chancroid, caused by a totally different virus from the other, which is the disease known as syphilis. Hence the term *syphilitic* is applicable to the latter alone, while the term *venereal* may be properly applied to all three diseases.

of its origin from this source. That it does take place in the lowest class of prostitutes, and not very rarely, my own observation in the Bellevue and Charity Hospitals in former years compels me to believe. I have seen four or five radiating fissures at the anus, the result of straining at stool, inoculated by vaginal discharges charged with the poison of chronic vaginal chancroid trickling down from the vulva. I have also seen chancroids at the anus become phagedænic and extend within to the rectum, and have verified, at a later period, the existence of stricture of the rectum from the cicatrization, as there was every reason to believe, of this same ulceration.

I have certainly seen this in several cases, but only in women. The extreme rarity of chancroidal ulcer of the anus or rectum in men is a circumstance that seems to confirm the mode of origin in women which I have just indicated, and it is held by many to explain the undoubted fact that stricture of the rectum is so very much more common in women. To my mind there are other reasons, already given, for the greater frequency of rectal stricture in women. The evidence of Prof. Erskine Mason as to the frequency of chancroidal ulceration of the anus and rectum, derived from his experience at the Charity Hospital, is very positive.* Dr. H. Bridge has also placed upon record "a case of chancroidal ulceration and stricture of the rectum," which he treated very successfully by colotomy.† The same opinion is held by most of the surgeons of the Charity Hospital, which affords such an extensive field of observation of venereal dis-

* *V. Amer. Jour. Med. Sciences*, January, 1873.

† *Archives of Dermatology*, New York, January, 1876, p. 122.

eases. Both Mason and Bridge arrive at conclusions excluding syphilis from the list of causes of rectal ulceration and stricture, and confirming the views of the French surgeons Gosselin and Desprès on this subject. From what I have seen of the effects of chancroidal and phagedænic ulceration in women, I also, ten years ago, was disposed to underrate the influence of syphilis upon the rectum, but, from later experience and additional evidence, I am compelled to reconsider the opinion.*

* The attention of the profession was first called to what he considered the local character of the ulceration of the rectum causing stricture—at that time generally called venereal, and assumed, of course, to be syphilitic—in 1854, by Gosselin, afterward the successor of Velpeau at La Charité, in Paris (see his original paper on "Syphilitic Strictures of the Rectum," in the *Archives Générales de Médecine*, t. iv, p. 667, 5^e série, and also in the article "Anus," in the *Nouveau Dictionnaire de Méd. and Chir. pratiques*, Paris, 1867). I quote Gosselin's conclusion in his own words, and confess that I have never been able clearly to understand it: "So-called syphilitic stricture of the rectum is not one of the constitutional manifestations of syphilis, but a lesion resulting from the proximity of a chancre of the anus." It is noticeable that in his original paper Gosselin does not formally recognize Bassereau's new doctrine as to the local nature of chancroid, for he speaks of auto-inoculable and freely suppurating chancres as "syphilitic"; and he makes no account of the fact that most of the twelve cases on which his paper is based were syphilitic women. By the term "chancre" he means both the primary lesion of syphilis and chancroid; and he includes also the ulceration excited in the mucous patches of true syphilis when seated at the anus by inoculation through contact of pus from a chancroid, and this latter, as all his observations were made upon women, was presumably derived from vaginal discharges.

Desprès, after some years at the same hospital, Lourcine—the female venereal hospital of Paris—published his observations on this same subject (in the *Arch. Gén. de Méd.* for March, 1868). He examines Gosselin's conclusion above quoted, and endorses it fully, adding that "with our present knowledge the law can be laid down that most non-traumatic strictures of the rectum are the result of ulceration taking its origin in neglected phagedænic chancres of the anus and rectum." If Gosselin's conclusion was somewhat obscure, the subject is hardly made clearer by his successor, whose rather dogmatic position is certainly not justified by the cases he cites. Desprès subsequently endeavored to enforce his views concerning phagedænisism before the Surgical Society of Paris, at the meeting of February, 1872 (*Bull. de la Soc. de Chir.*, 1873, p. 47, *et seq.*), and illustrated them by additional cases which he ana-

In ordinary practice, I do not think it likely that you will meet with cases of ulcer of the anus or rectum from chancroidal poisoning, except in the lowest

lyzed especially for this purpose; but his conclusions do not seem to me to be logical. They were not accepted by those of his colleagues who took part in the discussion, MM. Alph. Guérin, Trélat, Panas, Verneuil, and others, and I do not think that they have since been regarded with any more favor. Fournier and others who have since written on the subject do not accept them. In fact, this subject was studied by both Gosselin and Desprès at the same hospital, upon women almost exclusively, and women of the same class, and, with the recognized difficulties which attend the investigation of a subject so obscure, it is not surprising that their conclusions have not been accepted as final. Gosselin's idea was to demonstrate that rectal ulceration or stricture is not a common and legitimate manifestation of true syphilis, but an epiphenomenon. Desprès adds that the most frequent explanation of the epiphenomenon is phagedænism.

Curiously enough, both of these surgeons agree that the origin of the ulceration may be a true chancre, a chancroid, or a syphilitic mucous patch inoculated by a chancroid. I can not see, in the light since thrown upon the subject, that their labors can be regarded as having established any logical proof either of the rarity of syphilis or of the greater frequency of chancroid as causes of ulcer and stricture of the rectum. Fournier, their successor in the same field of observation, describes cases as examples of syphilis which are almost identical with the cases on which their conclusions are based, and, in formal published letters on syphilis of the rectum, hardly mentions chancroid as a cause of rectal disease (*Clinique de Lourcine—Lésions tertiaires de l'Anus et Rectum—Syphilome ano-rectal—Rétrécissements syphilitiques du Rectum*, Paris, 1875). Moreover, Fournier's professed views are in accordance with those of his contemporaries among the clinical teachers of Paris (v. *Bull. Soc. Chirurg.*, 1873), and with those of English surgeons, as set forth by Allingham (*loc. cit.*, London, 1879, p. 248). They are also for the most part confirmed by the latest histological study of specimens of these diseases by Malassez (*Trélat, Dict. Encyc.*), and Cornil (*Leçons sur la Syphilis*, Paris, 1879).

In Dr. Bridge's case, which was also seen by Dr. Mason and the late Dr. Bumstead, and which is carefully recorded, the following points seem to me worthy of note: A prostitute of thirty-eight, married, but no mention of childbirth. First seen in April, 1874, in hospital, broken down by dissipation and excess, said to be consumptive, and actually bedridden on account of painful and extensive rectal ulceration and anal fissures, and using morphine freely. "About the anus were a number of flat, pigmented, nipple-like, fleshy protuberances; at the edge of the anus, and extending up into the same, were four or five deep fissures which, on dilatation of the sphincter, were converted into large non-indurated ulcerations, with deep, dusky-red surface, showing no indication of a reparative effort. An inch above the margin of the anus, and as far up as could be seen by the aid of a medium-sized hard-rubber vaginal spec-

classes of loose women ; but you should be aware of the possibility of its occurrence, which to my mind involves a contingency somewhat analogous to the

ulcer, the mucous membrane was apparently wholly wanting, and in its place a continuously ulcerated, freely suppurating, grayish surface. Examination with the finger revealed the existence of a stricture of large caliber, about three quarters of an inch in diameter, just above the internal sphincter ani. No history of syphilis could be obtained." Five years before, she had two profusely suppurating painful sores at the orifice of the vagina, near its junction with the perineum, as shown at the present time (April, 1874) by a large cicatrix and by the presence of a bridge of mucous membrane in that place. Shortly after this, she began to complain of the rectum, and was told she had "piles." "She had undergone antisyphilitic treatment, and subsequently, under my direction, she was brought fully under the influence of mercury and iodide of potassium, but in no case did any symptoms of improvement in the ano-rectal disease manifest themselves ; on the contrary, the disease was aggravated, if anything. This specific treatment was instituted the last time consequent upon an attack of iritis in the left eye, which quickly subsided." As no treatment brought any relief to the pain and irritation of the rectum, and she was losing flesh from continued suppuration, although there was no serious obstruction at the seat of stricture, lumbar colotomy was done in July, 1874. After this, she began to improve, the purulent discharge gradually ceased, and the ulceration healed, "leaving a valve-like stricture just above the internal sphincter"; and her general condition was so good that, about a year after the operation, "she left the hospital and resumed her former habits as a common prostitute."

The difficulty in getting at the truth as to the share actually borne by chancre and syphilis in the rectal lesions of a common prostitute is illustrated by the circumstance that there is nothing in this exceedingly well-treated case that would absolutely forbid the conclusion that this woman was syphilitic previous to the chancroidal contamination, and that she might have had already mucous patches of the anus and rectum, which were abraded and inoculated by proximity, or that she had, at least, a degraded quality of tissue, from the existing diathesis, inviting destructive ulceration. Few common prostitutes escape syphilis for six years, and this time had elapsed before Dr. Bridge saw this patient ; and she had already taken mercury enough to suppress all ordinary manifestations of syphilis in a mild case. The circumstance of the failure of anti-syphilitic remedies to cure has no significance, for mercury will not cure chronic chancroidal ulceration even when ingrafted upon a patient suffering from the syphilitic diathesis, nor syphilitic strictures when they have undergone fibrous degeneration. On the other hand, she had, when first seen, a stricture of large caliber that had never contracted so as to cause obstruction ; and she had, subsequently, an attack of iritis. When her chancroidal ulceration finally healed under rest, the resulting cicatricial structure seems to have been more valvular and sharp-edged.

liability to conjunctivitis in gonorrhœa. For some reasons, the soft or chancroidal sore seems to be less common than it was twenty years ago, especially among people of the better class. A recent French writer even suggests the possibility of its becoming extinct.*

In a case of which the history and surroundings suggest the possibility of this cause for an ulcer of the rectum or anus, you have the test of inoculability at your command, and by this the diagnosis may be certainly determined. If the contagious period shall have passed, the ulcer left behind is to be treated as though it had arisen from any other cause.

5. *Syphilis*.—One of the earliest practical consequences of the demonstration by Bassereau, in 1852, of the non-identity of syphilis and what we now call the chancroidal ulcer, was the doubt raised by Gosselin, in 1854, as to the common occurrence of ulceration and stricture of the rectum from *syphilis*. Before this epoch, these lesions, when not directly the result of traumatism, were almost universally attributed to syphilis, and treated, after the manner of Desault, by the local application of mercurial ointment and bougies, and internally by anti-syphilitic remedies. The frequent ill success of anti-syphilitic treatment in curing the rectal lesions led to doubt in the minds of practical men as to the truth of the prevalent belief in their syphilitic origin, and to this doubt Gosselin first gave distinct expression; hence the attention which his paper has commanded. But, in the quarter of a century since its publication, a reaction has taken place against his views, probably because

* Mauriac, *Rareté actuelle du Chancre simple*, Paris, 1876.

they have been found not in accordance with the facts of cases since observed, and at present, in England and Germany as well as in France, and I think I may say in our own country, the evidence in favor of syphilis as a cause of rectal disease, not only in the way of direct manifestation in its usual forms, but also in its indirect influence as a diathesis, in retarding repair and disturbing nutrition by a tendency to abnormal and purposeless cell-proliferation, is again regarded with favor. The more thorough exploration now practicable in rectal disease through the aid of anæsthetics and the slowly advancing certainty as to the nature of the anatomical lesions of syphilis are furnishing the evidence on which this change of opinion is based. It is far from complete, but it is sufficient to compel us to modify former opinions and to wait for further facts.

I will endeavor to give you a statement of what is certainly known of this subject at present.

Ricord and his pupil Fournier and Vidal de Cassis each record an instance of a *primary* syphilitic lesion, or true chancre, in the rectum; the latter asserting that the induration accompanying the primary sore in his case was so considerable as to narrow the caliber of the gut. I had a ship's boy in my wards at the New York Hospital, in 1855, with a true chancre at the anus, followed by a well-marked secondary eruption; but I have never seen the lesion in the rectum. Such cases involve sodomy. Happily they are rare. Fournier says he has looked in vain for a true chancre in the rectum during six years' service at the Lourcine.

I have never recognized *secondary* ulceration of

undoubted character in the rectum, and recorded instances are wanting; but mucous patches are quite common at the anus, and they are liable to abrasion and to ulceration from local traumatic causes, and to chancroidal inoculation. When we consider how rarely the rectum is carefully explored, except where painful symptoms render this measure necessary, and that secondary eruptions are generally painless, the absence of recorded cases of secondary ulceration is not difficult to understand; while the common occurrence of secondary syphilitic manifestations at the other end of the alimentary canal—in the mouth and throat—justifies the assumption that they also occur, if not so frequently, in the rectum. Mollière * describes an ordinary whitish mucous patch which he saw in the rectum of a syphilitic subject; it was situated two inches above the anus. This author, without, however, giving any positive evidence in favor of his opinion, expresses in general terms a strong suspicion that syphilitic ulcerations of a serious character do occur in the rectum, and that the grave cases of rectal ulceration “so well described by the English surgeons” should be referred to syphilis; he also adds his testimony that specific treatment has no curative effect upon them.

Of the presence, in some cases of syphilis, of *tertiary* symptoms—gummy deposits and ulcerations—in the rectum, we have more positive evidence. More circumstantial than anything I can furnish from personal experience is the statement, by M. Emile Vidal,† that he distinctly made out nearly a dozen circular

* *Op. cit.*, p. 641.

† Author of the medical and etiological portion of the article “Rectum,” in the *Dict. Encyc. des Sciences Méd.*, p. 686.

ulcers in the rectum of a man with syphilis, at the *Maison Municipale de Santé*, in Paris, and that they got well under the influence of the iodide of potassium.

The actual presence of gummy tumors in the walls of the rectum has been admitted by implication by Virchow, Cornil, and Fournier, but said to be exceedingly rare. The latter* refers to an authentic case cited by Professor Verneuil. Esmarch† confirms the existence of gummy tumor of the rectum. So, also, does Von Bärensprung, of Berlin. Cornil gives a detailed account of a gummy tumor of the stomach, which he examined histologically. ‡ Fournier, admitting isolated tertiary ulcers and gummy tumors in the rectum as possible, but very rare, assumes as an undoubted fact that tertiary ulceration may extend upward into the rectum from the anus, and relates the case of a young woman in whom a phagedænic gummatous ulcer of the buttock reached and entered the anus, and extended thence up to the rectum. This same authority has formally described, under the name of "ano-rectal syphiloma," a thickened and lumpy condition of the anus and rectum, which, he asserts, does not tend to ulceration, and which is, probably, gummatous exudation in a diffused or infiltrated form.§ I have distinctly recognized this form

* *Op. cit.*, p. 9. † Pitha u. Billroth, *Handb. Erlangen*, 1872.

‡ *Leçons sur la Syphilis faites à l'hôpital Lourcine*, Paris, 1879, p. 406. See also Cornil and Ranvier, *Histologie Pathologique*, Paris, 1876, p. 856, *et seq.*, for authorities who have reported cases of syphilitic ulceration of the intestine, and their bibliography, at p. 1231. The authors say that these sources contain several observations which are very conclusive. See, also, the chapter by Leube "On Diseases of the Stomach and Intestines" in Ziemssen's *Cyc. of the Pract. of Med.*, New York, 1876, vol. vii, p. 109.

§ *Op. cit. supra*.

of syphilitic disease of the rectum, and have seen it disappear under anti-syphilitic treatment.* The following case from Virchow is of interest in this connection: A woman had been often under treatment at the Charity Hospital of Berlin during a period of ten years for different symptoms of tertiary syphilis in the skin and bones. Her nose was sunken. The autopsy showed nodes of the frontal and parietal bones and of the tibiæ. There were extensive cicatrices of the *velum palati* and of the pharynx, and an internal pachymeningitis, of the hæmorrhagic variety, of the cranial bones. The rectum was the seat of ulcerations—some recent, covered with diphtheritic exudation, and others cicatrized. There were three large scars in the jejunum, and numerous whitish tumors in the corresponding portion of its serous coat.

Virchow, it should be observed, acknowledges the impossibility, in the absence of gummatous deposit, of distinguishing a syphilitic ulceration of the rectum from ulcers caused by defective nutrition, by tubercle, typhoid, or dysentery; and Cornil, who is the most recent and probably the best authority in the histological pathology of syphilitic lesions, speaks very doubtfully as to the distinction, in certain cases, between gummatous and tubercular ulceration.

Mr. Allingham, in his last edition, reasserts his belief in the frequency of a syphilitic cause for rectal ulceration, but is somewhat general in his terms. He sums up his very large experience as follows: "In women" (with ulceration and stricture), "forty-two out of seventy-nine had suffered or were suffering from undoubted constitutional syphilis, and in twenty

* *Am. Jour. Med. Sci.*, October, 1879, p. 336.

males, half were in the same condition. Thus, out of the total number of ninety-nine patients, fifty-two, or more than half, were syphilitic" (p. 247). This seems also to coincide with the general experience of English surgeons. It is noticeable that, in Dr. Mason's table of thirty-one cases of "venereal stricture, fourteen are recorded as having had symptoms of constitutional syphilis," so that his percentage does not vary much from that of Mr. Allingham. Professor Agnew, of Philadelphia, says that he has cured some very aggravated cases of anal and rectal ulceration under the use of the iodide of potassium, or of one of the preparations of mercury, or of both combined.*

The following summary, by Emile Vidal,† represents the general opinion of French surgeons as to the pathology of the rectum in reference to the venereal diseases, and also, as far as they are represented by Esmarch and Bardeleben, of the surgeons of Germany: "The rectum may be the seat of soft chancre (chancroid), of phagedænic soft chancre, and—very, very rarely—of true syphilitic chancre, of tertiary syphilitic ulcers, of gummy tumors, and, finally, of ano-rectal syphiloma, if we agree with Fournier that this syphilitic neoplasm differs from true gumma."

For a full comprehension of this obscure subject, it is necessary that your attention should be called to the fact that, in certain cases where the syphilitic diathesis is present, but without any obvious symptoms of active disease, a simple traumatism or an ordinary furuncle may, in certain cases, during the process of repair, take on an unhealthy aspect, and assume the

* *Principles and Practice of Surgery*, Phila., 1878, vol. i, p. 427.

† *Dict. Encyc.*, art. "Rectum," *ut supra*.

characteristics of a syphilitic ulcer. Thus, on the external integument, the healing of the lesion is retarded, the resulting ulcer assumes a circular shape, and its discharge becomes glairy; and, after healing is at length accomplished, a white, smooth, depressed circular cicatrix peculiar to syphilis is left, and this most likely becomes surrounded by a ring of pigment. Tarnowsky* has proposed to utilize this fact to demonstrate the existence of the diathesis when other evidence is wanting. I have seen instances that certainly confirm its occasional value. In this way a simple traumatism of the rectal mucous membrane might take on a syphilitic character. A certain degraded quality of the tissues, diminishing their power of resisting injuries and also their capacity for repair, is pretty certainly present, as a rule, in the syphilitic diathesis; and this must be recognized as a factor in the causation of rectal ulcer, and consequently of stricture.†

* "The Nature of Syphilis," 1877, v. résumé by Keyes in *Arch. of Dermatology*, New York, Jan., 1879, p. 82.

† In a case, related in the excellent essay of Godebert (*Sur les Rétrécissements syphilitiques du Rectum—Thèse Inaugurale*, Paris, 1873), which bears all the marks of authenticity, this explanation of the occurrence of the rectal ulceration may be applicable. M. G. was called to see a young married lady, who suffered great pain in the sexual act. He discovered a hard chancre, quite prominent from induration, situated behind the meatus. She was at once put upon mercurial treatment, but had a well-marked roseola three weeks later. The treatment had been carried out five months when she became pregnant, and, with a month's intermission, it was continued two months longer. Some coffee-colored spots appeared on the chest during pregnancy. After her confinement, at full term, she was excessively costive, going two weeks without relief, and then having a succession of painful stools. Soon after this she noticed a bloody discharge from the anus, and afterward a purulent discharge that stained her linen. On examination, eighteen months from the first detection of the chancre, the anus was found perfectly healthy; the finger *in recto* detected no hardening but a granular surface, painful to the touch, toward the vagina, which the speculum showed to be an ulcer, commencing half an inch

At the anus, secondary syphilitic ulcerations may occur, as elsewhere on the surface of the body; but they are not seen so often in this locality as tertiary ulcers.

6. *Cancer*, as a cause of ulcer of the rectum, interests us at present only so far as to be able to recognize its presence; and even its diagnosis will be more profitably considered hereafter when we come to study that disease. A knowledge of the causes we have already discussed will justify a diagnosis by way of exclusion. Except in certain aggravated forms of venereal ulceration or of "malignant" scrofula, you will find no great difficulty in distinguishing a cancerous ulcer from any of those of which I have spoken.

Ulceration of the mucous membrane of the rectum, however produced, is liable to be followed by stricture. Ashton relates two cases in which the disease followed obstinate chronic dysentery.* But the comparative rarity of this result is explained by the fact that destruction of the mucous membrane alone is not sufficient to give rise to subsequent stricture unless the deeper tissues of the bowel are involved, especially the stratum of connective tissue underlying the mucous coat: just in proportion as this layer is invaded by ulceration or inflammatory exudation is the danger of subsequent contraction. This opinion is

above the verge, growing larger as it ascended, and above the sphincter tending to spread laterally on either side. It was treated by the proto-iodide of mercury internally, and locally by iodoform on *mèches* of lint, with improvement.

If the ulceration in this case was not provoked, in tissues of degraded quality, by violence inflicted in the act of parturition, it may possibly have originated in mucous patches excited to ulceration by the same traumatism.

* *Diseases, Injuries, etc., of the Rectum and Anus*, third edition, London, 1860, p. 304.

supported by the evidence of Quain* and Cruveilhier,† both of whom have ably investigated the subject.

In continuation of what has been said, under each of the foregoing etiological heads, concerning the *symptoms* of ulcer of the rectum and anus, I will next proceed to sum up this division of the subject.

The *symptoms* of ulceration in the rectum are: frequent desire to go to stool, with loose passages—what would be usually regarded as diarrhoea; or a constant uneasy feeling in the rectum with a sensation of weight over the sacrum extending to the loins; and, when relief is sought at stool, more or less tenesmus and discharge of bloody pus and mucus smearing the fæces—a group of symptoms very likely to be ascribed to dysentery. Allingham describes the looseness of bowels accompanying ulcer as occurring mainly in the morning. In Annandale's case of the Indian medical officer, this circumstance is not noted, but the case was called both diarrhoea and dysentery during the three years which elapsed before a surgical exploration proved it to be neither, but simply a solitary small ulcer.

The frequent stools in this affection are excited by the contact of fæces with the sensitive spot in the rectum; the same cause of irritation provokes increased watery secretions, and blood exudes from the raw surface under the muscular compression that attends the act of defecation. The patient voids the usual amount of normal fæces; but, besides this—either accompanying it or alone—he passes, also, these products of the local lesion.

* *Op. cit.*, p. 185.

† *Traité d'Anat. Pathologique*, t. ii, p. 231.

There is often, in ulcer, acute pain, and a more or less constant sense of exquisite soreness referred to the rectum. When the ulcer extends within the grasp of the sphincters the pain is intensified, especially at stool, and liable to be accompanied in some degree by the spasm of fissure; but it must be remembered that there are exceptional cases in which it is faint or even entirely absent. In such cases, the looseness, which may occur only at the period in the day when the functions of the rectum are usually performed, will constitute the only symptom of the disease. In the ulceration preceding syphilitic strictures, which, according to Fournier, is exceptional in its occurrence, the characteristic purulent discharge from the anus is often accompanied by little or no pain.

Occasionally in ulcer of the rectum there is sympathetic irritability of the bladder, of which I have a case now under observation.

The *prognosis* of rectal or anal ulcer, except where it has followed a recent traumatism in a healthy subject, is serious, and may involve life. There is danger of its simple persistence in a chronic form, with exhausting pain and disturbance of the functions of the bowels; of extension on the surface, or in depth, especially where an unextinguished local virus or a constitutional diathesis—scrofulous or syphilitic—is present; of perforation, with the consequences of abscess, possibly stercoraceous, and of fistula, if below the reflexion of the peritonæum—otherwise, of fatal peritonitis.* In proportion to the extent of the ul-

* Mr. Henry Lee says (*Lectures on Pract. Path. and Surg.*, London, 1870, vol. i, p. 156), that a perforating ulcer of the rectum most commonly results in

ceration, there is danger, when it heals, of stricture of the canal from the contraction which invariably attends cicatrization; and this danger, because its seat is hidden and its consequences somewhat remote, is liable to be underrated. There are few instances, therefore, in which this affection does not demand prompt and judicious care.

Under the head of *diagnosis*, I must repeat that "fissure, or irritable ulcer of the anus," is not included in the present category; its characteristic and excessive pain from spasm in the sphincter is rarely, if ever, encountered in the form of ulcer now under consideration. Here the pain is rather described as aching, wearing, and continuous, but not characterized by paroxysms; and, as a rule, it is attended by spasm only in the exceptional instances in which the ulcer invades the portion of the rectum grasped by the external sphincter.

A case of persistent "diarrhoea" or "dysentery," accompanied by a constant pain or uneasiness over the sacrum or a sense of weight in the loins, that resists ordinary remedies, should be examined for ulcer, especially when the disturbance of the bowels is confined to the early part of the day. The cases are rare in which satisfactory evidence can be got by sight of the existence of rectal ulcer on pulling apart the margins of the anus, and digital examination can not always be trusted. A thorough exploration under ether is the course to be adopted. Ulcerated piles are not uncommonly found, but they require the radi-

a blind internal fistula, but that it may prove the source of a "diffuse cellular inflammation" by stercoraceous extravasation—like urinary extravasation—and lead, like the latter, to incisions of perinæum, pubes, scrotum, and penis.

cal treatment for hæmorrhoids, not for ulcer. As a rule, the symptoms caused by ulcer are more marked the nearer it is to the anus. A tubercular ulcer in healing produces an irregular bridled cicatrix, as in the neck of a young person. Where chancroid is suspected, inoculation should always be practiced. Tertiary ulcers at the anus, as when they occur upon the genitals, are often distinguished with difficulty from chancroid. There seems to be no certain test but inoculation, and this has been generally neglected. Nevertheless, to the practiced eye, there is a physiognomy presented by the anal wrinkles, thickened by infiltration, with the elongated ulcers between them, called by the French *rhagades*, which is unmistakably syphilitic; and it is worthy of notice that these fissure-like syphilitic ulcers, although in their nature persistent and painful, rarely, if ever, assume the characteristics, especially the peculiar and intolerable pain, of the true irritable ulcer; i. e., they do not excite spasm of the sphincter to anything like the same degree, and are not properly treated by the same remedies.

Treatment. — The remedies which have proved most valuable in the treatment of anal and rectal ulceration are those which secure rest and protection from irritants locally, and tend to remove constitutional defects and improve the health generally. Cleanliness and means to obviate friction, of which prepared cotton-wool and vaseline are the type, are required at the anus, or a stimulating antiseptic, like the balsam of Peru, or the latter rubbed up with vaseline in proportion of 3j-3ij to ʒj. For secondary syphilitic ulceration of the anus, calomel in powder, alternating with a weak lotion of chlorinated

soda— ξj to Oj —black or yellow wash, and mercury or mixed treatment internally. For tertiary ulcers, calomel locally, with vaseline or Peruvian ointment, or calomel added to the benzoated zinc ointment, and the iodide of potassium internally. For chancroidal ulcers of the anus, where destruction by nitric acid is not admissible, extreme cleanliness, iodoform, persulphate of iron. For scrofulous ulcers, more decided stimulants are required externally, such as alcoholic lotions, tincture of iodine, juniper-tar soap, and oakum, with the hypophosphites or cod-liver oil internally, and change of air.

For ulcers of the rectum, local applications are, to say the least, inefficient. Nitrate of silver may temporarily relieve painful sensations, and other stimulating alteratives and astringents, as advised by most writers, may do service at the moment, but the difficulty and annoyance that attend their frequent application by the aid of a speculum render a reliance upon them an uncertain and routine practice that I can hardly recommend. Small injections of bismuth rubbed up with gum and some anodyne, thrown up after stool, I have seen do service in mitigating pain and delaying the calls, and also the insertion of a suppository containing two grains of subsulphate of iron or of tannin. Any similar medication, in either of these last-mentioned forms, may be repeated by the patient, after proper instruction, with but little trouble.

The basis of treatment of ulcer of the rectum consists in so modifying the diet as to render the faecal residue bland and unirritating, and this is best attained by confining the patient to a diet of rice, or, still better, of milk alone. I have heard it said that

the late Dr. Physick was in the habit of confining patients with obstinate rectal affections to a diet of rye mush and molasses, and also to the bed for six weeks. There is probably no one remedial measure of greater value in rectal ulceration than this simple diet. I have seen results, in the least hopeful cases of rectal disease, from the milk cure associated with country air in the neighborhood of the sea-shore, which seemed to me to justify great confidence in its value. To the dietetic remedy, rest in the horizontal position is a necessary adjunct, for the mobility of the superincumbent mass of intestines is a constant source of friction to the rectum.*

Judicious perseverance in these simple measures will generally cure an ordinary case of ulcer of the rectum, if undertaken early, and they rarely fail to favorably modify cases of the most serious character.

Upon this basis, other means, if they prove necessary, may be added, and the most effectual of these is incision of the ulcer and simultaneous division of the sphincters. The object of this operation, which has the sanction of the best practical authorities, is to place the ulcer entirely at rest by dividing the fibers of the underlying unstriped muscles deeply enough to effect the object without endangering perforation.

* The following hospital case from Quain (*op. cit.*, p. 184) illustrates the effect of diet and rest, and also the occurrence of stricture as a sequel of ulceration: A woman, of eighty-three, admitted, with a good deal of ulceration around the anus and within the bowel, for which no cause was made out. She was much distressed with tenesmus and pain, and the frequent discharge of puriform matter. Under the use of a bread-and-milk diet, with chalk mixture and opium, and subsequently gallic acid, the ulceration was after a time found to be almost entirely healed; but a circular stricture, just admitting the end of the finger to pass, was discovered more than an inch up the gut—evidently the result of cicatrization. There was no evidence to be had of previous disease of the bowel.

The free division of the sphincters at the same time has the effect of suspending, as far as they influence the ulcer, the series of forcible contractions of the whole muscular apparatus by which the expulsive function of the rectum is accomplished. It is not necessary to carry the incision completely through the whole thickness of the sphincters, except in cases of long standing. Sufficient rest to insure healing is secured by completely arresting the contractility of the muscular fibers upon which the ulcer is seated. Incision of the ulcer and simultaneous thorough stretching of the sphincters might be sufficient; but incision of both is more certain. Even where the ulcer is small, it is good surgery to use the knife with judicious freedom.* Incision, where the area of the ulcer is moderate in extent—that is, when it does not exceed a half dollar in size—will almost certainly arrest the symptoms of the disease and start the healing process, which, under favorable circumstances, will go on to an entire cure. But even here there are exceptions, although I have not seen them. In the case of Mr. Annandale, it was necessary at the end of a month, in consequence of the arrest of cicatrization, to draw a knife a second time across the face of the ulcer, which, it will be remembered, was of three years' standing; after this, it healed promptly.

Where the rectal ulcer presents a larger area, and

* In Mr. Luke's case (*London Hospital Report, Lancet*, vol. i, 1845, p. 572), the ulcer was seated at the posterior part of the rectum just within the sphincter; it was no larger than a "three-penny piece," in a laborer of forty, a hard drinker, with hepatic disease. The stools were accompanied by considerable sharp pain, which continued for half an hour after, and sometimes a few drops of fresh blood. The sphincter was divided by cutting directly through the ulcer. There was no more pain, simply a sensation of slight soreness. The man left the hospital in ten days, cured.

shows a disposition to refuse to heal, or to increase in defiance of all treatment, and in those grave cases of extensive and intractable ulceration, encountered most frequently in hospital patients, where the suffering at stool is severe, and the ulceration, although not cancerous, is apparently incurable by other means, it is proper to consider colotomy as a remedial measure. The very moderate danger to life of this operation and the numerous instances now on record in which it has been followed by permanent cure in most unpromising cases make it the surgeon's duty to give his patient the chances of cure which it certainly affords. In Dr. Bridge's case, already cited, the woman was rescued from a most deplorable condition, and left the hospital well. In the more recent and equally hopeless case colotomized at the New York Hospital by my colleague, Dr. Weir, its result in entire cure of the rectal ulceration was verified, on post-mortem examination by Dr. L. A. Stimson, after the patient's death from phthisis in Bellevue Hospital some time afterward.*

* This woman was a music teacher, of bad habits, who entered the New York Hospital suffering greatly from stricture of rectum within reach of the finger, complicated with ulceration. She gave the history of a sore near the genitals five years before, which had slowly and gradually extended to the anus, and through it up into the gut. She was undoubtedly syphilitic. Since the formation of the stricture she had been subjected, according to her account, to linear rectotomy, and had also undergone anti-syphilitic treatment without benefit. On examination, a good deal of unhealed ulceration was found coexisting with the stricture in the rectum, that at the anus having healed. For the ulceration, colotomy was performed. Eight months later this woman entered Bellevue Hospital with phthisis, and after some weeks died. At the autopsy the rectum was removed and carefully examined by Professor Stimson. It presented a smooth cleatrix and no very noticeable amount of stricture. The artificial anus had evidently done good service. As the body lay on the table in the dead-house, there was a protrusion of at least six inches of healthy descending colon from the lumbar opening.

R. C., thirty, single; seen in consultation with Professor Stimson at the Pres-

byterian Hospital, in February, 1878, with an irregular surface ulceration the size of a dollar on the posterior wall of the rectum, and a recognizable amount of semi-annular contraction from cicatrization on the left side of the gut about two inches up. There was a history of dysentery in the autumn of 1876; beyond this, no cause was made out, and the man had been suspected of malingering. He complained of more or less uneasiness and of frequent stools, at which blood and pus were passed. He was put on milk diet, nitrate of silver was applied locally, and subsequently iodoform, and he wore Lepelletier's plug. After some months this patient was again examined as before, under ether, and the ulcer was entirely healed, with slight contraction. This man, as I learn, returned again to the hospital, complaining of his rectum and passing pus, and in March, 1879, was subjected to lumbar colotomy by Professor Post. When I saw this patient again, nearly three months after the operation of colotomy, he had gained flesh, the lumbar anus was performing its functions satisfactorily, and there was no positive complaint of the rectum. There was occasionally a little bloody discharge, but no pus was noticed. The finger *in recto* caused pain, especially when the posterior wall was touched. Here there is a distinct granular roughness recognizable, and when the finger is forced up as far as possible the old contraction can be felt. The man has a noticeably clammy hand, a downcast look, and a lack of frankness of manner. Professor Post informs me that, if the rectal lesions get well, he will attempt to close the lumbar opening.

I also saw a young married woman of twenty-four, in consultation with Professor Stimson, who had a smooth, irregularly shaped ulcer entirely above the sphincter, as large as a half dollar, on the left lateral and anterior wall, and two smaller ones posteriorly, which gave her some uneasiness, and caused too frequent stools, which were attended by bleeding, sometimes profuse. This woman, who was otherwise quite healthy, had borne children—one very difficult labor—and had been under treatment for uterine disease; she was separated from her husband. No distinct cause was made out for the ulcer, which was uniformly red, with but slight elevation of its edges. It was touched with nitrate of silver, and several times with tannic acid. She also had her sphincter stretched subsequently, and wore Lepelletier's plug; and, as I am informed, was cured entirely in about two months.

LECTURE IX.

BENIGN STRICTURE OF THE RECTUM.

LIKE all the other hollow viscera of the body, the rectum is liable to diminution in its normal capacity; and any constriction or narrowing of its caliber—whether the result of organic changes in its walls or of pressure from without—is, surgically, a stricture, provided that it possesses the quality of permanence.*

A stricture of the rectum may be “linear,” as though a ligature had been tied around the gut, forming an almost membranous partition with a central opening and sharp edges—strictures of this kind are also called “valvular,” or “diaphragmatic”; or the narrowing may involve more of the rectal walls, and

* I am aware that this definition includes cases heretofore designated simply as rectal obstruction—as by pelvic tumors, etc.—but, as we learn more of the etiology of stricture, it becomes difficult to exclude narrowing of the rectum from external causes from the category of stricture. At the Anatomical Society of Paris, in 1852 (*Bull. Soc. Anat.*, 1852, p. 49), Broca presented a specimen taken from the body of a woman of fifty, with a stricture of the rectum at about four inches from the anus, produced by what was to him a novel cause. The uterus, which was enlarged and knobbed, probably from fibromata, had contracted adhesions posteriorly with the rectum, and there was plastic exudation extending in two narrow bands from either side so as to encircle and constrict the rectum. He adds, “It is probable that most valvular strictures are the result of a similar mechanism.” This is probably too broad an assertion; but I have seen valvular stricture caused by bands of organized neoplasm following “pelvic cellulitis,” and permanent compression of the rectum by abscess and tumor, as well as by the products of inflammation, frequently give rise to all the legitimate symptoms of stricture. These examples illustrate the difficulty of excluding all obstructions from outside pressure from the surgical definition of stricture.

present a more blunt and rounded surface within; or it may be still more elongated and "tubular" in character, occupying as much as one or two inches of the gut. Again, instead of being annular, it may be crescentic, extending only partly around the cavity of the bowel.* There are, in exceptional cases, two, three, or more points of stricture; and in very rare instances the whole rectum from the anus to the sigmoid flexure has been found constricted. Perret† found only four instances, in fifty-nine cases which he had collected, in which there were more than one stricture: in one of these (from dysentery), there were three; and in another (from the use of nitric acid to cure "piles"), there were two. In forty-six of Perret's cases, the measured length of the strictures varied from half a line to three and a half inches. Most of the causes producing stricture act upon the lower third of the rectum. Baillie mentions, as the principal exception, its junction with the sigmoid flexure, which he specifies as the narrowest point in the large intestine, and more liable to injury from foreign bodies and hard substances. Benign stricture is, therefore, in the great majority of cases within the reach of the finger, which I estimate at from three to three and a half inches in length. Sir Benjamin Brodie, a high authority in all questions involving large surgical experience, asserts the rarity of exceptions to this rule, and it is further confirmed by more recent measurements.‡

* Tillaux, Verneuil, and others describe partial strictures of this variety. In most instances they are seated posteriorly, about the upper limit of the internal sphincter.

† *Essai sur les Rétrécissements*, p. 37. Paris, 1855.

‡ "Strictures of the rectum are commonly situated in the lower part of the

There is no positive evidence of the existence of a purely spasmodic stricture. Wherever spasm of muscular fiber, voluntary or otherwise, exists, there is some cause for it—reflex or direct—of which the irritable ulcer causing spasm of the external sphincter is a type; and this cause is to be recognized as the disease, and not the temporary narrowing to which it gives rise. Permanent spasm of involuntary muscle I regard as an impossibility.

Etiology.—When it is not the result of congenital malformation, stricture occurs as a consequence of traumatism—to which, from its position, the gut is exposed—or of disease attended by ulceration and

gut, within the reach of the finger. Are they ever situated higher up? I saw one case where stricture of the rectum was about six inches above the anus; and I saw another case where there was stricture in the sigmoid flexure of the colon, and manifestly the consequence of a contracted cicatrix of an ulcer which had formerly existed at this part. Every now and then, also, I have heard from medical practitioners of my acquaintance of a stricture of the upper portion of the rectum or of the sigmoid flexure of the colon having been discovered after death. *Such cases, however, you may be assured, are of very rare occurrence.* Inquire of anatomists who have been for many years teachers in the dissecting-room, or of surgeons who have witnessed a great number of examinations in the dead-house of a hospital, and they will bear testimony to the correctness of what I have now stated." (Sir B. C. Brodie, on "Diseases of the Rectum," *London Medical Gazette*, vol. xvi, p. 30.)

Perret, who is much quoted by French surgeons, concludes, as the result of the examination of about sixty cases in regard to this point, with this remark: "*Aussi donc 48 fois le mal n'a pas dépassé 9 centimètres*"—about three inches and a half (*op. cit.*, p. 34). Independently of cancer, Bushe had never seen a stricture of the rectum that was not within the reach of the finger (*op. cit.*, p. 265). Mayo asserts that "stricture so high up as the junction of the sigmoid flexure and rectum is extremely rare"; so much so that he gives two cases from Mr. Cæsar Hawkins, which were fatal from obstruction, and were examined after death (*op. cit.*, p. 179). Salmon and others, who held White's doctrine concerning spasmodic stricture, do not hesitate to assert the frequency of its occurrence beyond the reach of the finger. But their opinions are not fortified by post-mortem examinations, and are not received at the present day. I have examined this question elsewhere ("Phantom Strictures and Obscure Diseases of the Rectum," *Am. Jour. Med. Sci.*, Oct., 1870, p. 12).

destruction of tissue, as dysentery, chancroid, phagedæna, and syphilis. In all forms of traumatism, the tendency to contraction which occurs during the process of healing is the active agent in producing stricture. But, not unfrequently, stricture of the rectum is due to alteration of the tissues composing its walls by deposit in their substance of material generated under the influence of certain diathetic diseases, such as cancer (which we shall not now consider), tubercle, or the gummy exudation of tertiary syphilis. Of these diathetic structural changes, those due to the first-mentioned diseases are also, sooner or later, attended by ulceration; but in tertiary syphilis it is not necessarily present. As a rule, ulceration, from whatever cause, and the contraction that accompanies cicatrization are the principal factors in producing narrowing in the caliber of the bowel. But the ulceration must involve some loss of substance; simple erosions that do not penetrate beyond the thickness of the rectal mucous membrane heal without subsequent contraction.

As I have already considered the various causes of ulceration, there is little more to be said under this head concerning the etiology of stricture; but I must ask you to remember that the treatment I have laid down for ulceration of the rectum includes, also, the *preventive treatment* of the most intractable of all the forms of stricture, namely, that caused by cicatrization.

Stricture of the rectum is not a common disease, but it is as well that I should state at once that, when you do meet with obstruction to function from narrowing of the caliber of the bowel in this locality, in

a majority of such cases you will have to deal with cancer. I do not think that I put the case too strongly in asserting that the presence of cancer is the rule as the cause of this disease, and congenital malformation and contractions from other causes are the exceptions. But, happily, these exceptions exist in a fair proportion, and, as they constitute the cases of stricture in which treatment is of most avail, having thus called your attention to the important distinction between the benign and the malignant forms of the disease, I will dismiss the latter to another occasion, and endeavor to make you familiar with strictures which belong to the benign or non-malignant class.

Of benign strictures there is a certain but small proportion due to *congenital atresia*, from arrest of full development of the rectum, analogous to the narrowing so often met with in the urethra near its meatus and to certain forms of vaginal atresia. This is a point of etiology often overlooked. Such cases present a history of difficulty in defecation dating from very early life. I remember a stout and ruddy Irish girl, in the wards under my charge many years ago in the adjoining hospital, with a valvular or diaphragmatic contraction about an inch and a half from the anus. Its central opening would just admit the first joint of the index finger, and the edges of the stricture were sharp, suggesting the use of a knife for their division. In fact, I treated the case in this manner, nicking the sharp edges freely at three or four points, and afterward gently inserting smooth, well-lubricated bougies, and gradually increasing their size. The result of this treatment was satisfactory. This was, probably, a case of congenital atresia, for

the only physical disability of which I could discover any evidence in this otherwise healthy girl was the habit since childhood of retaining the fæces for a week, and often longer. Congenital atresia is simply a narrowing of the gut, short of complete occlusion, or "imperforation." Like imperforation, it is due to arrest of development. When the narrowing is not very great, this condition may pass without discovery during childhood, its consequences being ascribed to ordinary constipation. On exploration, a sharp-edged ring, like that just described, with a more or less narrow opening, is detected. Gosselin assumes that all strictures of this description in young subjects are due to malformation, and he uses for them the terms "valvular" and "congenital" interchangeably.*

Congenital stricture is not common, and is liable to remain undiscovered. Most recorded cases are in young adults.†

This variety of stricture is characterized by extreme constipation, but Nature seems to accommodate herself to the obstacle, for there is a singular absence of suppuration above the stricture, of frequent calls,

* *Clinique chirurg.*, third edition, Paris, 1879, t. iii, p. 706. For further information concerning them he refers to a *mémoire* by Bérard and Maslieurat-Lagemar on strictures of the rectum (*Gaz. Méd. de Paris*, 1839, p. 146), and another by Demarquay (*Journal l'Expérience*, t. ix, 1842, p. 273).

† Dr. H. G. Jameson, of Baltimore (*Medical Recorder*, vol. v, 1822, p. 290), divided two membranous septa, one above the other, in the rectum of a young lady, with a button-headed bistoury, which he passed "into the opening or ring of the septum," and cut freely down toward the sacrum. This was done in September, 1821. The patient got well. Roser (*Archiv. für physiol. Heilkunde*, 1859, p. 125) mentions a circular valvular stricture an inch from the anus in a little girl of four, which he treated by division.

M. Reynier (*Gaz. Hebdomadaire*, November 29, 1878) refers to a congenital valvular stricture in a young girl, in the practice of M. Tillaux, and to several others, and makes a study of them clinically.

of diarrhoea, and of failure in the general health. The obstacle itself consists of mucous membrane alone, and is therefore curable by section, as in the case I have related.

Stricture of the rectum may occur as a direct result of *traumatism*; but, in a large majority of cases taking their origin in a wound, it will be found that there has been delay in healing, attended by a prolonged stage of suppuration, and that this has occurred, probably, in a subject with a defective constitution. In very few of the serious injuries of the rectum in healthy subjects, even in the fearful wounds by impalement of which I have spoken elsewhere, has there been any subsequent stricture reported in the cases which have survived; and, in gunshot wounds of the rectum, military surgeons have noticed the fact that, even when it has been anticipated on account of the severity of the injury, stricture has rarely followed recovery. But the close proximity of the usual seat of stricture to the external opening of the bowel is certainly suggestive of possible injury from without, and cases are not wanting where contraction has followed the introduction of foreign bodies into the rectum, the manœuvres employed for their removal, and other surgical operations in this locality. I once saw a patient at St. Vincent's Hospital in a desperate plight from stricture, who had lacerated the lining membrane of the rectum some years before in his efforts to get rid of its contents. He had been left in Texas in charge of cattle early in the late civil war, and, cut off from communication, was compelled to subsist entirely on milk, without any vegetable food. As a consequence of the unirri-

tating qualities of this food and the absence of cathartic medicine, his lower bowel became distended with an almost colorless mass of hard, putty-like consistence, to get rid of which he was forced in his extremity to use sticks and such rude means as he could command, and in this manner he caused injuries which led subsequently to a bad stricture at the usual seat. In this case the stricture was complicated by several fistulæ communicating with the bowel above the seat of contraction, which, as is generally the case, was dilated, and its lining membrane was in a state of chronic inflammation, yielding a free purulent discharge.

Contusions of the rectum, and burns, either by acids or cauteries, are often followed by contraction. In Mr. Curling's twenty-eight cases, twenty were in women, and nine followed labor—apparently the result of bruising during parturition. This explains, in a degree, the comparative frequency of stricture in the sex. In a case reported by Dr. Whitehead,* in a matron of forty-two, the wearing of a pessary for twelve years seemed to have been the cause of the stricture. My friend Dr. C. C. Lee tells me he has seen several cases in the Woman's Hospital with traumatic thickening of the vaginal aspect of the rectum from this cause. I have seen stricture from nitric acid, applied to arrest bleeding after an operation for internal piles; in fact, quite a number of such cases, where the acid has been used in the treatment of piles and for the cure of prolapse, are on record. Chassaignac mentions a case of aggravated character in which sulphuric acid had been used by mistake for *sirop de guimauve* in an

* *Am. Jour. Med. Sciences*, July, 1872, p. 114.

enema. Quain and Low have cases of stricture following turpentine injections. There can be little doubt, judging from the liberal use of the actual cautery for the cure of old and large prolapse, as in the cases reported by Dieffenbach, Kluyskens of Ghent, and others, that stricture must have followed.

As to the views of White, Salmon, Calvert, and others, who believe that stricture of the rectum takes its origin in "muscular spasm from the contact of vitiated secretion, producing inflammation and subsequent thickening of the walls of the gut," I can find no evidence of their truth, and am forced to regard them as mainly speculative. Mr. Curling says nothing of spasm, but speaks of pathological changes causing stricture as "originating in chronic inflammation of the mucous and sub-mucous areolar tissue of the rectum." He subjoins illustrative cases of stricture from a "kick," a "fall upon the brass button of a perambulator," and a "wound by a glyster-pipe."*

In other recorded cases, stricture has been attributed to "a fall upon the seat going down stairs," "a fall in which the coccyx struck a piece of marble, causing crepitus," and "abscess in the recto-vaginal septum." Perret has no less than eight cases in which stricture was ascribed to crime against nature. Begin has a case following the operation for fistula. In the last century, when this operation involved complete extirpation of every fistulous track, stricture, no doubt, often followed it.

Inflammation in the lower pelvis outside of the bowel may lead to its partial occlusion by newly organized exudation, as in Broca's case, in which the

* *Op. cit.*, fourth edition, 1876.

rectum was encircled by bands from a uterus studded with fibrous tumors. I once saw a lady, with Dr. Quackenboss, who was suffering from extreme obstruction of the bowels, which we found to be caused by a band of contractile tissue pressing sharply upon the bowel from without, evidently the result of a very serious pelvic cellulitis from which she had recently recovered. The sharp edge of this band, almost entirely occluding the gut—just as an artery is closed by the needle in acupuncture—was within the reach of a long finger, so that we succeeded in guiding a tube beyond it, and by the judicious use of injections of warm water the bowels were relieved. The systematic use of this palliative measure led to a cure, for I had an opportunity the following year of satisfying myself that the band which pressed upon the bowel had softened down and disappeared, mainly through the restorative powers of nature. The patient was otherwise in good health, and able to dispense with the enema.

In the case of a young woman of twenty-nine, who died of intestinal obstruction, stricture was found in the colon at its splenic angle and also in the rectum. There were adhesions, left by old peritonitis, especially well marked near both the strictured points, which had evidently interrupted peristaltic action at these points sufficiently to give rise to obstruction. The strictures were found to be pure hypertrophy of all the coats of the intestine, evidently the result of extra effort to force the contents of the bowel through the adherent and obstructed portions.

It is as well to mention here some other examples of extra-rectal obstruction which have been encoun-

tered in the garb of stricture, causing mechanical impediment to function. In a young woman brought to me with inability to defecate in the usual position, I found that the obstacle was a fibroma at the fundus of the uterus, which caused retroversion in the squatting position and absolute ball-valve-like closure of the rectum. The difficulty was obviated by the use of an enema and a bed-pan in the horizontal position. In a clergyman from the West, threatened with entire stoppage, I detected a globular elastic tumor (enchondroma) fixed to the brim of the pelvis, and proposed colotomy, which was gladly accepted, so great were his sufferings. But, during a necessary delay of some weeks, the urgency of his symptoms was mitigated by keeping the stools liquid, and, as was afterward proved, the tumor changed its direction of growth, so that the patient has been able ever since to secure regular relief.*

I have already considered, under the head of ulcer of the rectum, the part played by chancroid as a cause of stricture, and this seems to me, in a limited class of cases, to be well established.

The ulcerative forms of syphilis are also proved by good evidence to contribute to the same result. They are necessarily associated with the damaging influence which the constitutional dyscrasia is liable to exercise upon all the tissues—mainly in delaying re-

* Curling, who also reports a case of fibroma of the uterus, says he has had to tap an ovarian cyst, and in another case a pelvic hæmatocele, both through the rectum, to relieve symptoms of obstruction simulating stricture. This author and Salmon record cases of hydatid tumor developed between the bladder and rectum, that of the latter was verified by a post-mortem examination. Both fibrous and fatty tumors developed outside of the rectum have been mistaken for tumors of the rectal walls, and treated by bougies as for stricture. (Curling, *op. cit.*, 1879, p. 136).

pair. Thus, syphilis not only favors ulceration, as a rule, but it is also recognized at the present day as manifesting its harmful influence in a tendency to extravagant cell proliferation.* This is liable to locate itself in the lower end of the rectum, just as in the œsophagus, trachea, and elsewhere, when excited by an ordinary traumatism which, in a healthy organism, would have been harmless. This, in fact, would seem to be the most obvious pathogenetic cause of stricture in syphilitic subjects. M. Malassez found the intervals between the fasciculi of the muscular coat at the seat of greatest contraction, in a syphilitic stricture, filled with a round-celled neoplasm, which sometimes also invaded the substance of the muscular fibers. This neoplasm seems capable of development into fibrous tissue. Fournier asserts that ulceration, as a cause of syphilitic stricture of the rectum, is far less frequent than the thickening produced by an organizable deposit of this nature. According to Bardeleben,† the muscular coat of the rectum is liable to become infiltrated with gummatous exudation, and form a stiff, narrow tube. The narrowest part of the resulting stricture is just above the anus. Es-march holds the same opinion.

The more I study this subject clinically, the more I am disposed to regard syphilis as a pregnant cause of rectal stricture. In the best and most recent collection of cases of benign stricture, about half are recorded as occurring in syphilitic subjects (Allingham; Mason). Without being conclusive, this is certainly significant evidence. On the Continent, and

* Cornil, *Leçons sur la Syphilis*, Paris, 1879.

† *Lehrbuch der Chirurgie*, etc., Berlin, 1874.

especially in England, professional opinion is almost unanimous as to the very considerable frequency of syphilis as a cause of this disease.

In summing up the etiology of benign strictures, they may be classified as—(1) *congenital*, which are usually valvular; (2) *cicatricial*, including cases arising from traumatism or ulceration, with loss of substance; and (3) *fibrous*, that is, strictures taking their origin in simple hypertrophy (as by a necessity for increased effort to overcome an impediment, as from peritoneal adhesions, etc.), and the large class of strictures from proliferation or hyperplastic exudation ultimately undergoing fibrous change, as in syphilis.

As to the *morbid anatomy and histology* of benign strictures, they present to the naked eye, on section, in most instances, the appearance of tissue of cicatrix, more dense in some cases than in others, but always whitish and fibrous, sometimes glistening, and creaking under the knife. Parts presenting these features were formerly described under the name of "scirrhus." In the earliest English monograph on stricture the disease is described as the "scirrhus-contracted rectum."* Under this title all varieties of stricture were included, the distinction between benign and malignant not having been made until later.

The substance of a benign stricture when examined under the microscope shows, in most specimens, a great increase, both in bulk and in density, of the connective-tissue element, the sub-mucous, inter-muscular, and external or sub-peritoneal layers all participating. Yellow elastic fibers have been noted as present in increased quantity in one instance. The

* Sherwin, in *Memoirs of the London Medical Society*, vol. ii, p. 9, 1789.

muscular coats are almost always hypertrophied, and, as these naturally form the principal thickness of the rectal walls, the same proportion is preserved in case of stricture. The connective tissue between the muscular fasciculi constitutes a large share in the increased bulk of the muscular coat, but the unstriped fibers are also more numerous and larger, and the whole muscular element is hypertrophied. In a valve-like stricture, characterized by loss of substance and puckering, there is greater density of texture, and often a tendinous hardness. In some cases the mucous membrane, although it may be altered, covers the face of the stricture with an unbroken surface; but, more frequently, it is replaced by a surface of granulations on a base of fibrous tissue. Both above and below the stricture, resting on and encircling its orifices, numerous little tumors may be often felt or seen, and an adenomatous thickening of the mucous membrane often exists below, the result of irritating contact of pus, together with orifices of fistulæ, and cicatrices. In the substance of the central or thickest part of a growing stricture, recently formed granulation tissue, consisting mainly of embryonic cells, has been observed, and also, among the fibers of the muscular coat, small cavities filled with these cells—points of origin, probably, of abscesses destined to result in fistulæ.*

* M. Cornil, *ut supra*, p. 412, sums up the pathological histology of syphilitic strictures as follows: "According to M. Malassez, who has communicated a note on this subject to M. Delens, editor of the article *Rectum* in the *Dictionnaire Encyclopédique*, the stricture, at its narrowest portion, consists not, as is usually stated, of cicatricial tissue, but of a material in all respects identical with granulation (embryonic) tissue. It is made up entirely of young elements, and gives way readily. In the lower portion of the stricture, where it is oldest, bundles of newly formed fibrous tissue are found surrounded by embryonic

The rule in obstructed canals is dilatation above, and contraction below, the point of obstruction. The cavity of the rectum immediately above a stricture is always dilated, from habitual over-distention. Its walls are also thickened, mainly from hypertrophy of the muscular coats through increased efforts to get rid of its contents. The mucous lining of the dilated portion is more or less intensely congested, often eroded, and sometimes deeply ulcerated at points, as I have described elsewhere. But it is to be noted that dilatation may exist for many years in benign stricture without ulceration, more especially in valvular strictures of congenital origin.

While there is always dilatation above a stricture, it is equally a rule that the bowel below the narrowing is contracted, and its mucous membrane thickened, and often granulated and studded with wart-like eminences—which are, in some cases, true papillomatous growths, but more frequently, perhaps, overgrown follicles, or adenomata. Externally, the connective tissue around the strictured rectum is liable to be condensed and thickened by hyperplastic exudation in a variable degree. The peritonæum investing its upper portion is not unfrequently the seat of adhesions—the traces of local peritonitis, which, when it becomes general, is a recognized and not a rare cause of death in stricture.*

cells, as in cicatrices. Fasciculi of the muscular coat, also, are isolated by these cells." See, also, Panas (*Bull. de la Soc. Chirurg.*, Paris, 1872, p. 543), and Valtat (*codem loco*, p. 572), for a histological study of a stricture in which similar appearances are described.

* The following notes from cases of stricture examined after death will serve to supplement its morbid anatomy:

A boy died at sixteen with unrelieved obstruction from a tight stricture which followed a prolapse in infancy. On dissection, a stricture was found

The *symptoms* of stricture are due not only to the local effects of the impediment to the passage of fæces and gas, but also to its obstructive influence upon the functions of the whole intestinal canal, and the consequent structural changes, which ultimately involve vital organs. The symptoms of stricture are, therefore, general, as well as local. It is to be noted that, while the latter are mainly obstructive in their character, the exhausting purulent discharge so commonly furnished by the altered surface of the dilated bowel above the stricture and the possibility of ab-

two inches from the anus, and more than an inch in length, covered within by unbroken mucous membrane, which by a little care could be raised from the muscular coat. The latter was two or three times thicker than normal. The cellular coat around the rectum was extensively indurated and inseparably blended with the muscular coat, especially at the point of greatest stricture. Several enlarged lymphatic glands were imbedded in this tissue, which is described as a simple hypertrophy, due probably to the prolapse, which was quite large, and not cured until his sixth year (Perret, *op cit.*, p. 79). It seems probable that the stricture in this case was due to contraction of the perirectal connective tissue, excited to proliferation by violence habitually applied to the protruded rectum in reducing it, or possibly by some means which had been employed to effect the cure of the prolapse. After this the fibrous stricture formed slowly and gradually, but ten years elapsed before it caused death.

A woman of twenty-eight, of good constitution, entered Lourcine Hospital, Paris, in September, 1864, with a history of chancre and anti-syphilitic treatment, and the formation of a recto-vulvar fistula five years before. Now, she has a stricture of the rectum, commencing at two inches from the anus. No condylomata at anus, which is bluish in tint, and habitually bathed in pus. The finger, passed within, feels hard, resisting, uneven walls. Just below the stricture are two fistulous orifices through which the probe emerges, just above the fourchette, into the vagina. Belly tumid; colics; diarrhoea, followed in a week by fatal peritonitis. On dissection, old peritoneal adhesions were found, most marked in the pelvis. The lower four or five inches of the rectum are contracted by thickening of its walls, so that its pouch is obliterated. At three and a half inches above the anus a tumor is described as surrounding about three inches of the rectum, its greatest bulk being behind, and its aspect fibrous; it was fairly continuous, without line of demarkation, with the thickened walls of the gut. The mucous membrane within, somewhat altered and uneven, was continuous and unbroken throughout (Provent, *Bull. Soc. Anat.*,

sorption of putrid material have an especial importance, as liable to produce septicæmic poisoning, hectic, and amyloid degeneration.

The symptoms of stricture almost invariably present themselves, at first, in a hardly distinguishable form, for the obstruction to the function of the rectum to which they are due comes on very gradually and even insidiously. In fact, the progress of the disease throughout is tardy, and its general character essentially chronic. Habitual slowness in the action of the bowels, with difficulty in getting rid of the contents

1855). This case is reported as a tumor growing from the outer surface of the rectum. It is, apparently, an excessive hyperplastic growth, by the contraction of which the gut was narrowed.

Two cases of syphilitic disease of the rectum in women are reported, with specimens by Dr. Dowse, in *Trans. of the Path. Soc. of London*, vol. xxvi, p. 3. Both women were prostitutes, and undoubtedly syphilitic.

In the first case the disease began five years after infection. The stricture was seated just above the internal sphincter; it yielded to pressure, and the surface of the gut above was ulcerated, feeling rough and uneven, "like a worn-out nutmeg-grater." There was a history of "diarrhœa," with purulent and bloody discharges. The bowel was evidently fixed to the surrounding connective tissue, which "was infiltrated by hyperplastic deposit," and "all the contents of the pelvis were matted together."

In the second case there was a tight, narrow stricture about two inches above the verge, yielding slightly to pressure, with an irregularly ulcerated surface above it. The rectum was "normally adherent to the posterior wall of the pelvis by fibroid thickening of the connective tissue," and its muscular coat was hypertrophied. "It was evident that the sub-mucous connective tissue had undergone hyperplastic inflammation with great puckering of the gut from cicatrization" (p. 113). The liver was waxy (amyloid) and fatty; the kidneys pale and waxy. There was an opening into the vagina, which latter showed a chronic irregular thickening of its sub-mucous tissue, producing a rigid and unyielding state of its walls, with extensive superficial ulceration.

Verneuil, in the discussion on *syphilitic stricture of the rectum*, at the Surgical Society of Paris, in 1873, speaks of the infiltration "called tertiary" of the vagina, as smooth, non-ulcerated, almost like fibroma or elephantiasis, and infers that the same ought to occur in the rectum. He adds, "We must admit, therefore, plastic infiltration, a fibroid tissue of new formation, and subsequent contraction, analogous to the changes which take place in syphilitic testis," to explain the formation of a long tubular stricture of the rectum.

of the rectum, except in diarrhœa or under the effect of laxative medicine, is its earliest as well as its most characteristic manifestation. The colon is liable to become distended with gas which can not readily escape below; colicky pains plague the patient; and there is a tendency to eructation—which Copeland considers, but without sufficient reason, to be almost pathognomonic of the disease. The fact that these earlier symptoms are undistinguishable from those of ordinary constipation from simple *paresis*, teaches us why habitually constipated persons are so often led to suspect that they are victims of stricture. There is a certain "sense of obstruction," of which persons of a constipated habit often complain, as if produced by a mechanical barrier; and by this they are much impressed.*

Gradually, when stricture is really present, the difficulty in defecation increases, the desire to go to stool becomes more frequent, the colicky pains more urgent, and the patient is forced to resort to purgative medicine at regular intervals to get the relief afforded by a full evacuation. In a certain proportion of cases nature seems to perform this office, for after a period of constipation it is relieved by a spontaneous diarrhœa; but the relief is only temporary. The diarrhœa is explained by irritation of the surface of the

* Mayo (*op. cit.*, p. 155) gives the case of a *physician*—in his own words—who for many years struggled, with bougies, etc., against an imaginary stricture of the rectum, and who eventually got well by determinedly abandoning all remedies except an occasional enema of warm water, and at the time of writing enjoyed "perfect health." "I should tell you," the physician concludes, "that, at one time, such was the state of the stricture of the rectum, that the largest-sized urethral bougie alone would pass, and that at another the contraction was so far in the intestine that a bougie of three feet was considered necessary to reach it."

bowel from the accumulation of fæces above the stricture, provoking increased afflux of blood, and watery exudation. The existence of this habitually over-distended bowel just above the seat of stricture, the mucous surface of which has gradually become congested, explains both the pain over the sacrum and the frequent and urgent desire to go to stool, which are characteristic symptoms of fully formed stricture. Later in the case the free and constant flow of pus from this surface is a feature of great importance because it involves direct danger to life. In exceptional cases the diarrhœa, instead of manifesting itself at intervals, becomes continuous, and the patient, having no longer prominent symptoms of obstructed defecation, and, being now habitually too loose, may even be supposed to labor under chronic diarrhœa. But, as a rule, in stricture, there is a paroxysmal effort at relief by diarrhœa after a period of obstinate constipation; and, when this does not happen spontaneously, increased griping, with a sense of extreme distention, compels the sufferer to resort to purgatives. In an otherwise healthy subject, this breaking up and evacuation of a mass of more or less hardened fæces accumulated in the upper rectum and sigmoid flexure are attended by a degree of effort which is often excessive. An hysterical crisis, in women, is not a very rare consequence; and rupture and even hæmoptysis have been known to occur.*

* Amussat, in his description of the case of the celebrated Broussais, speaks of such a crisis as a *debâcle*—a term applied to the breaking up of ice in a spring freshet.

Cruveilhier (*Path. générale*, t. ii, p. 236) gives a graphic account of a case he once observed: "A staff officer of high rank was subject to severe attacks of obstruction in the bowels, simulating in their severity the symptoms of in-

In benign stricture it is a remarkable feature of the disease that these periodical evacuations may be borne for many years before the general health gives way. During all this time there are not only difficulty and pain in voiding fæces or entire inability to secure relief without purgatives, but, in addition to the colics and sense of distention, there are more or less constant backache and often nausea and vomiting.* Sooner or later, however, according to the extent of the ulcerated surface above the stricture and the amount

ternal strangulation, but caused, as was found after death, by stricture of the rectum. After constipation, lasting five or six days, he began to have painful griping, marked by intermissions, in the sigmoid flexure of the colon, which gradually became very hard, and the fæcal accumulation within it could be readily felt. Fearful of consequences, he had learned to take at once on these occasions an ounce and a half of sulphate of soda, which seemed to be the purgative most certain in its action. Its first effect was to cause intense contraction in the large bowel, the whole course of which was manifest, for it stood out prominently; and these contractions, by their intermittent character, the horrible pain accompanying them, and the groans of agony which were forced from the sufferer, resembled exactly the pains of childbirth. There was never any vomiting. After five or six hours of this cruel suffering, when the patient, with a pinched and pallid face and a rapid, feeble pulse, thought himself near his end, suddenly, in a paroxysm, he would expel a little mass of solid fæces, and then, as if forced through a narrow opening, an abundant flow of liquid fæces would follow. This *débâcle* brought entire relief; and, after leaving him apparently dying at my morning visit, I have often found him drinking champagne with his friends at dinner in the evening, trying to drown the recollection of his suffering."

* Perret (*Thèse inaug.*, p. 24) gives the case of a woman who presented a healthy aspect after ten years of suffering: "The patient goes to stool without result eight or ten times a day; the effort is often followed by shivering, and she has continually sharp, colicky pains and backache. . . . With this she has a good appetite and digestion, and no belching of wind." Fournier, in his peculiar style, describes a hospital patient with a syphilitic stricture of eight years' duration, as "*grosse, grasse, joufflue, rosée et très bien portante.*" Panas (*Bull. de la Soc. Chirurg.*, 1872, p. 541) describes a woman of forty who finally applied for relief by surgery, as "suffering from nausea, vomitings, and colics, with desire to go to stool, but utter inability to get relief." It had been her habit for ten years to take a bottle of citrate of magnesia every week, as the only means by which she could get an evacuation.

of pus production, the appetite fails, hectic fever sets in, and with emaciation and declining strength, and increasing distention of the intestines, the patient is no longer able to accomplish the efforts required for even temporary relief, and finally, if not anticipated by peritonitis, death comes by exhaustion. It is not an uncommon occurrence for the sufferer to refuse food through dread of the pains of defecation; and in quite a large proportion of stricture patients the end is preceded by phthisis.*

This is an outline of the symptoms of benign stricture where no remedies beyond purgatives have been employed; but there are details to be added and complications to be described. These latter add greatly to the suffering incident to the disease.

In the earlier stages of stricture the frequent calls to stool, provoked by the presence of fæces lodged above the constriction, are generally followed by motions, passed mostly with much pain and forcing, which are scanty and unsatisfactory. The fæces, when of solid consistence, from being forced through a tight constriction by successive efforts, are voided in small, round, or oval masses resembling sheep-dung, and are often accompanied by slimy mucus, colored brown by oozing of blood from the congested mucous membrane of the gut above the stricture. The narrow, "ribbon-like," figured fæces so habitually spoken of as characteristic of stricture are by no means pathognomonic of the disease. According to

* In the case already mentioned as reported by Panas, the patient, when she applied at the hospital for relief by operation, is described as "weak, pale, with a belly distended by coils of intestine full of gas and fæces. She can not digest food, and is afraid to eat because it increases her uneasiness and gives her more frequent desire to go to stool, where she can pass nothing."

Curling,* these appearances are more significant of a contracted or irritable external sphincter than of a stricture seated some inches above it. But I have noticed that, when a tight stricture is near enough to the anus, the patient, in straining forcibly, has actually forced the strictured portion of the bowel through the opening of the anus far enough to give its final impress to solid material extruded under this extreme pressure. I witnessed this in the case of an eminent surgeon, who was thus enabled to feel the seat of the disease, which he regarded as an indurated hæmorrhoidal mass, and which he was anxious to have removed. Unfortunately it was an epithelial growth.† I am the more disposed to explain the presence of tape-like stools by this mechanism for the following reason: When a tight stricture has developed, the external sphincter will be found to have lost in a great degree its normal tonicity through non-use; its function has been replaced to a certain extent by the stricture, and it is not so constantly required to antagonize the diaphragm. Hence, as one of the symptoms of stricture, there is often complaint of involuntary escape of discolored mucus, or, still later in the disease, of pus tinged with fæces, which has filtered through the stricture. The instance I have related is not the only one in which I have known a patient project his stricture through the external sphincter in straining to get a discharge from the bowel, and I suspect that it is not an uncommon occurrence.

* *Op. cit.*, fourth edition, 1876, p. 130.

† Bushe quotes from White the case of a clergyman who died with stricture of the upper part of the rectum, who a few days before his death passed a mass of fæces "as large as the natural diameter of the gut." It had been gradually collecting in the rectum below the stricture.

In about nineteen cases out of twenty, an individual, presenting the symptoms which have been enumerated, will be found, on digital examination, to have an obstruction in the lower part of the rectum, which can be made out, by the touch alone, to belong to one of the varieties of stricture already described.

The feel of a benign stricture is well described by Sir Charles Bell, who also asserts the comparative rarity of cases in which it is too deep to be thus felt: "The finger only enters to the second joint, when it is obstructed by a sort of membrane standing across its passage. Sometimes the stricture is more than two inches within the anus, and feels like a perforated septum." This description applies especially to a "valvular" stricture; a narrowing of a more tubular character is recognized with equal facility. The tip of the finger may enter a funnel-shaped contraction and be arrested before its narrowest point is reached, more or less pain being caused by the use of any force; the degree of contraction is now to be determined by the substitution of smaller bulbous bougies.

And here I must caution you against employing force, even with the finger; the desire to do so when you feel a stricture yielding to pressure is a little hard to resist, for you naturally want to judge of its length and density, and to feel beyond it. But the altered tissues are prone to give way, and fatal consequences have followed such an effort, even at the hands of judicious men.*

* M. Lannelongue reported a case to the Surgical Society of Paris (*Bull.*, 1872, p. 476), in which during a digital examination he ruptured a little abscess, and thus opened up a communication between the gut above the stricture and the cavity of the peritoneum. Fatal peritonitis set in at once, and the post-mortem examination disclosed these facts.

In the progress of a case of stricture, symptoms of *abscess* are always liable to occur, in most instances as the result of straining to overcome the local impediment; they are marked by an increase of local pain, with possible fever, preceded by a chill. Abscess under the circumstances ends usually in the formation of a fistula, opening externally on the buttock, sometimes into the base of the bladder or urethra, and, not rarely, into the vagina. There may be a succession of abscesses, giving rise to new fistulæ. In cases of long standing, the perinæum and buttocks are sometimes riddled with them.*

The formation of fistula, as in the case of the urethra, might be regarded as a conservative effort to prolong life by opening a new avenue for escape of fæces, but that the fistulæ communicate with the rectum, as a rule, at or below the seat of stricture, and only exceptionally above it. In the unique case, already mentioned, of Tanchon, however, abscess and fistula occurred twice, and in each instance the entire contents of the bowel escaped by the new canal, and death by complete obstruction was for the time averted; and, as we have seen, ulceration above the stricture, in rare instances, causes perforation and the

* In 41 cases of simple benign stricture collected by Sauri (*Étude sur le Rétrécissement du Rectum, Thèse inaugurale*, Paris, 1868, p. 35) there were one or more fistulæ in 16.

In a woman of thirty-five who was subjected to colotomy by the late Mr. Maunder, at the London Hospital (*Lancet*, June 29, 1878, p. 935), there was a long narrow stricture, and the buttocks were riddled in all directions with sinuses discharging pus and liquid fæces. Her condition, the reporter adds, "was deplorable, and her expressions of misery very great." In one of Verneuil's cases, a Prussian soldier, ultimately cured by complete rectotomy, there was enormous swelling of the scrotum involving the whole perinæum, and no less than ten fistulous orifices pouring out fetid pus.

formation of stercoraceous abscess.* Ulceration into the vagina, as in cancer, may afford temporary relief. But the presence of fæces in the urine, from ulceration into the bladder, adds greatly to the patient's suffering. In the rare cases in which fæcal matter makes its appearance in the urine, a search for strictures of the rectum should not be neglected, for there is always a probability that it is present; and it may be either the cause or the consequence of the abscess which has preceded the recto-vesical fistulous communication. In a gentleman who died under the care of the late Valentine Mott, a piece of chicken bone had lodged in the wall of the gut, and provoked an abscess on its peritonæal aspect which effected adhesion to the bladder, and finally opened into its cavity. Now the outside exudation which precedes abscess under these circumstances, and which in fact glues the gut to the bladder, is very liable to extend around the gut and lead to its constriction.†

Peri-rectal abscess, originating in thrombosis or

* Mayo (*op. cit.*), who asserts that, "when a narrow stricture of the rectum has existed for some time, the increased pressure of the fæces upon the bowel above" at first dilates the bowel, and then causes it to ulcerate, illustrates this by describing two preparations in the museum of King's College. In one of these the stricture is two inches from the orifice, and above it three ulcers are seen leading into fistulous sinuses which open near the anus. In the second preparation, openings in the bowel above the stricture are seen to lead into a large and thick sac situated between the uterus and vagina in front and the rectum behind. The sac contained nearly a pint of liquid fæcal and purulent matter. The nature of the affection was not suspected before death, the patient's symptoms being considered those of dysentery. (P. 177.)

† In the case of a medical man, recently reported by Dr. Morrison (*Trans. Path. Soc.*, London, 1879, p. 326), who died ultimately from septicæmia, a fish bone had been apparently the cause of the trouble. A stricture of the rectum had formed by the mechanism above described, and in the dilatation just above the stricture a small opening was found leading into a pouch between the rectum and bladder, and thence, by another opening, the probe passed directly into the cavity of the bladder at its base.

in rupture of pelvic blood-vessels from the violent straining—a not very rare complication—is indicated by increased local pain with rise of temperature. Peri-rectal cellulitis, when pus formation does not follow, may result in hyperplastic exudation and adhesions binding the rectum to adjacent parts.

Minute multiple fistulæ perforating the bases of the little pedunculated tabs of integument so frequently found at the verge of the anus, and described as condylomata, are often met with in cases of stricture. They sometimes present sharply cut orifices, and this feature is regarded by a recent writer as characteristic of syphilitic stricture. Sometimes these minute fistulæ dry up and heal throughout, leaving dry tracks.*

* In a case presented to the Anatomical Society of Paris, by M. Marot, an interne of M. Trelat (*Bulletin*, etc., 1877, p. 356), of a woman of twenty-nine, who had been seen by M. Fournier, and pronounced by him a case of *syphilome ano-rectale*, the patient had first complained of stricture about a year before, although her syphilis dated back at least ten years. The stricture was seated two inches from the anal orifice, around which there were numerous little pedunculated tabs, and close to the bases of two of these were the cleanly cut orifices of superficial fistulæ. The stricture itself is a thickish ring with serpiginous ulceration on its face, and dilatation and thickening of the gut extending some inches above it. It was decided not to be the result of cicatricial contraction, but a simple stenosis resulting from plastic thickening of the walls of the bowel.

This case was made the subject of a clinical lecture by M. Trelat (*Progrès Médical*, June 22, 1878, p. 473, and December 15, 1877, p. 705). The patient had been subjected to an operation—complete longitudinal section by the *écraseur*—and died shortly after of erysipelas. A recto-vulvar fistula had also formed five months before. This and the two short fistulæ already mentioned are asserted by Trelat to be characteristic of ano-rectal syphiloma in this: that they are short, none of them extending above the stricture, and that they are all healed within, and dry, like the holes in the ears for ear-rings. The stricture admitted the finger readily, and could be felt from the vagina. Trelat differs from Fournier concerning the absence of ulceration in ano-rectal syphiloma, which the former regards as a peculiar infiltration, and styles it a "quaternary symptom" of syphilis. He differs, also, from Gosselin and Deprés, insisting that syphilitic strictures are due to "plastic infiltration from a constitutional cause." Trelat mentions the case of a woman who had *fourteen* fistulæ; and

Finally, to the history of the symptoms, progress, and complications of benign stricture, must be added the possibility of sudden and fatal obstruction by the accidental impaction in its narrowest portion of some small hard body, such as a mass of concrete, hardened fæces, a cherry-pit, or a plum-stone. Cases are on record of death from sudden and persistent valve-like occlusion by each of the substances specified; and I once saw a case in which the undigested remains of an apple-core formed the plug.

It is evident that the *progress* and *duration* of a benign stricture may vary within wide limits, according to the constitution and circumstances of the patient. A stricture of the congenital variety, as it does not tend to contract, and begets a certain tolerance of its presence from infancy, may continue many years before it compromises life. There is a case, related on good authority,* of a French naval officer, who lived to the age of fifty-four with a valvular stricture which was evidently congenital, and which was apparently never discovered until after death. He had suffered with obstinate costiveness from his birth, often passing from ten to forty days without a stool, his evacuations being always preceded by colics, and his belly always distended. He survived several serious and almost fatal obstructions, passing in one of them the seeds and skins of grapes he had eaten the year before. On inspection of the body, a diaphragmatic stricture, with a central opening of half an inch,

also that of an officer, whom he had seen with Desormeaux, who was the subject of long standing ano-rectal syphiloma complicated with fistulæ, one of which communicated with the bladder, and this communication he could see with the endoscope. This officer subsequently died of pelvi-peritonitis.

* *Dict. des Sci. Med.*, vol. vii, p. 258.

was found an inch and a quarter from the anus. Immediately above this obstruction, the rectum was so enormously large that, with the dilated colon, it filled not only the pelvis, but the abdomen, and contained thirty kilograms of fæces of a poulticy consistence. Upon its mucous surface were two ulcerations and one gangrenous spot. In the account of this unique case there is no mention of palliative remedies, which were apparently limited to purgatives. In the other varieties of benign stricture, the duration of life depends mainly upon the intelligence and perseverance with which these remedies are employed. The most efficient means of palliation—the systematic use of bougies to resist contraction—is yet to be discussed under treatment.

In regard to *prognosis* we are justified in saying that, while benign stricture is almost invariably sooner or later a mortal disease (for there are rare cases in which, after a time, the tendency to contract ceases), death may be deferred many years by judicious palliation; and it may be added that the more effective surgical operations now under trial are not entirely unpromising as to a possibility of radical cure. The most important points to be kept in mind are the mildness of the earlier symptoms of the affection, its invariable tendency to get worse—not only by increasing contraction leading to obstruction, but also by the dangers arising from consequent organic changes, from progressive dilatation, and from chronic suppuration above the stricture, hectic, phthisis, and amyloid degeneration. You may ask, How long can a patient with stricture survive after complete obstruction? There are statements in the books almost

too extravagant to be received, but Dr. De León, of South Carolina,* records a case of "scirrhus contracted rectum" in a lady of twenty-five, in which there was entire occlusion complicated with pregnancy, and, finally, death after *ten weeks* of absolute faecal retention, a few hours after the birth of a dead child at seven months. There was in this case, of course, "enormous distention," and "the body exhaled a strong faecal odor"; but nothing is said of septicæmia, of the mode of death, or of its immediate cause. At the post-mortem examination, general, strong, old peritoneal adhesions were found, and a tight (apparently fibrous) stricture within two or three inches of the anus. If this case of fifty years ago was not cancerous, the employment of modern methods might have possibly saved two lives.†

The *diagnosis* of the existence of a benign stricture, when seated within the reach of the finger, necessitates little more than the exclusion of cancer; and this point will be fully considered under the diagnosis of that disease. When beyond the reach of the finger, a study of the literature of stricture teaches us that its diagnosis has been attended by much uncertainty, and that this has led to grave errors and false views as to the nature and the curability of the disease. In the absence of means to determine the diagnosis with certainty, folds in the rectal walls or the promontory of the sacrum have beyond a doubt

* *Am. Jour. Med. Sci.*, vol. ii, 1828, p. 330.

† Dr. Mossman (in Duncan's *Annals of Med.*, 1797, p. 307) reports a case at great length of a gentleman of thirty who lived two months without a stool, and after death was found to have a uniform stricture, an inch in length, at the commencement of the rectum. Cases by Gooch and others recorded at this period show that strictures of the rectum were then regarded as necessarily fatal.

been assumed in many instances to be veritable strictures, because they have obstructed the onward progress of an exploring instrument. The rarity of honestly confessed mistakes renders it proper to keep in memory the case reported by Syme, in which no less than "three hundred hours" were spent by a physician and surgeon, both men of respectability, in introducing the bougie at regular intervals to dilate a stricture for an elderly lady, in whom, on subsequent examination after death from other causes, no stricture, nor traces of stricture, could be found. Experiments made by these gentlemen at the post-mortem proved that the bougie, introduced as usual, was arrested as usual—but by the promontory of the sacrum—and that this was all the evidence of the supposed stricture. I have discussed this subject more fully elsewhere.* Impressible dyspeptics, suffering habitually from costiveness, accept with singular facility the idea of a mechanical obstacle in the rectum in explanation of the difficulty they experience in getting free evacuations; and it is in fact strongly suggested by their subjective sensations. In this way, no doubt, self-deception has often arisen.†

* *Am. Jour. Med. Sci.*, October, 1879.

† Bushe's remarks on this subject are as true now as when he wrote them. He says (*op. cit.*, p. 284), "I have examined several persons in whom the rectum was perfectly sound, and yet were considered by others to labor under stricture. . . . The inexperienced are apt to refer the opposition offered to the passage of the bougie by the folds of the mucous membrane or the projecting ridge of the sacrum to stricture of the gut. I am mortified to add that I have good reason for supposing that there are a few who make a profitable trade of treating dyspeptic patients for stricture of the rectum, asserting that the obstruction is high up, when, in truth, the intestine is perfectly free from structural disease. Such practitioners, by passing bougies, apparently cure what in reality never existed, and thus obtain a character for skill in the treatment of this disease which in truth they do not possess."

The believers in purely spasmodic rectal stricture, including some of the most trusted experts in these affections, have based their faith—always evolved from theory—mainly on false impressions derived from these sources of error; and they have been confirmed in it by apparent cures, in which the use of the bougie has been the most prominent, but not the sole, remedial agent. Dr. Gross, in his remark that “stricture of the rectum is much more frequently described than observed,” alludes, I assume, to imaginary strictures; but it must be admitted, on the other hand, that there have been many cases of fatal “diarrhœa,” “dysentery,” and “intestinal obstructions,” so called, which were, in reality, undiscovered strictures.

The improved means of exploration now in use, if employed with care and tact, will rarely fail to secure certainty in the diagnosis of stricture. These means include anæsthesia—a most important aid to diagnosis; the prone position, with elevation of the pelvis during exploration; the use of proper spatulæ and means of illumination; and Wales’s flexible caoutchouc rectum tubes—so arranged that a bulb of large size can be created by inflating its extremity after complete introduction. The injection of tepid water into the bowel has a certain value in demonstrating the presence of an obstruction by stricture, as well as by intussusception, and also in giving an idea of its proximity to the anus. In exceptional cases the introduction of the hand, when of moderately small size, into the bowel, with great care and gentleness, has proved safe in my experience, and has been of the greatest service.

A gentleman from the West, who had consulted quite a number of surgeons, in Europe as well as in this country, for obstinate irregularity of the bowels, and was strong in the belief that his symptoms were all due to a stricture beyond the reach of the finger, begged me to undertake an operation for his relief. I consented to make a preliminary exploration, under ether, and to act accordingly. Finding no evidence of physical obstruction by the exploring tube, which had entered freely some twenty inches, I asked Dr. Keyes to introduce his hand. This was readily accomplished to the extent of about twelve inches, and the absence of any organic stricture of the rectum satisfactorily demonstrated. In another case, a widow lady of sixty-seven, in an adjoining State, had been introducing bougies, by the advice of a specialist, for a number of years for a supposed stricture. Her instrument, which was about the size of a little finger, was forced in some eight inches, and often doubled upon itself. Her attacks of obstinate costiveness, which alternated with diarrhœa, were becoming steadily more frequent and protracted. In one of these, which had lasted already more than a week, aid was sought. There was no stricture to be felt by the finger, but the water test gave evidence of obstruction at no great distance from the anus, for the bowel could be made to receive only about a pint and a half. Here, also, Dr. Keyes made a manual exploration of the rectum, and discovered an impassable stricture in the sigmoid flexure. The patient was weak from vomiting, with a pulse of 90, and anxious for relief. Lumbar colotomy was therefore resorted to with the immediate result of securing an abundant flow of soft natural

fæces. But she did not recover from her exhaustion, and died on the second day. On post-mortem examination, a perfectly benign stricture an inch and three quarters in length was found twelve inches and a half from the anus. Its density was cicatricial, a probe could not be passed through it, and no clew could be got as to its etiology. There were no evidences of peritonitis.

This patient had suffered for fifteen years, having occasionally complete stoppages, and always constipation alternating with diarrhœa. The impression was left by this case that, if colotomy had been done years before, life might have been indefinitely prolonged.* These methods of exploration will all be demonstrated to you hereafter.

In view of the comparative rarity of stricture, it is always possible that its symptoms—frequent calls to stool, with tenesmus, and the passage of blood and pus—may be ascribed to *dysentery*; and cases are on record in which the true cause of these symptoms was not detected until after death.

It has often happened that surgeons have undertaken the operation for fistula, and in some instances, even, have completed it, without discovering the presence of a stricture to which it was due. Where there are a number of fistulous tracks, the induration accompanying them, especially in a fat patient, may render the rectum so difficult to reach by the finger that the existence of a stricture might not be detected. A fibrous tumor of the uterus, by impeding the progress

* In two out of the four cases of colotomy for obstruction reported by Maunder (*Med. Times and Gaz.*, February 13, 1839), more than forty years ago, the diagnosis of stricture high up in the gut was made by introducing the hand into the rectum.

of a bougie, has so closely simulated stricture as to lead to fatal error.*

Fæcal accumulation in the sigmoid flexure may produce a soft solid tumor in the left iliac fossa; such a collection has been mistaken for a secondary growth of soft cancer. In one of the cases of local hypertrophy described by Huguier under the name of "*es-thiomène*" of the female organs,† the lupoid thickening had extended upward from the vulva so as to involve the rectum and cause stricture. This is a condition which in a hospital patient might be mistaken for the tubular infiltration which sometimes characterizes syphilitic stricture.

As a last word on diagnosis, let me warn you not to commit yourselves to an opinion as to the existence of a stricture without having employed all possible means to attain certainty.

* *Case*.—Mr. Holthouse reported (*Trans. Lond. Path. Soc.*, vol. iii, p. 371) a case of obstruction of the rectum, as was found afterward, from pressure of a fibrous tumor of the uterus. A bougie introduced beyond the tumor was arrested at about six inches from the anus. This was considered to warrant lumbar colotomy, which was done; but, a meso-colon existing, the peritonæum was opened, and also an adjoining coil of ileum. Death followed in ten days from peritonitis. At the autopsy, it was proved that the bougie had been arrested by the promontory of the sacrum.

† *Nouveau Dictionnaire*, etc.

LECTURE X.

BENIGN STRICTURE (CONTINUED).—TREATMENT.

THE *treatment* of benign stricture is conveniently discussed under the heads of *palliative* and *radical* measures.

Under the first belong (*a*) the means employed to keep the fæces "soluble"—such as diet and laxative medicines; (*b*) dilatation, by bougies, etc., to counteract the tendency to contraction; (*c*) partial division, incision, or nicking of the stricture from within the bowel, in conjunction with the use of bougies; (*d*) mercury and iodine, in syphilitic strictures; (*e*) colotomy.

In the cases recorded as cured by these measures, used alone or conjointly, I have been forced to the conclusion that, in most of them, the strictures have been imaginary, or that the result has not been verified with sufficient accuracy. The exceptions to this statement have been, probably, cases of congenital atresia, where the mucous membrane alone has been involved in the valve-like partition, which has shrunk away after division; and cases of purely syphilitic stricture treated early.

Under the head of *radical* remedies may be ranged (*a*) complete division, in a line parallel with the axis of the bowel, of all the tissues comprised in the stric-

ture; and (*b*) entire removal of the whole strictured portion of the bowel by amputation or excision.

The treatment of stricture from outside pressure, which we have for the sake of convenience included in our definition of the disease, requires but little separate consideration. Whether the cause of narrowing or obstruction of the canal originating outside of its own walls consists in encroachment from neighboring viscera, new formations in the shape of tumors, or simple "inflammation," with its consequences in the way of adhesion or abscess, just as soon as the diagnosis is clear, the indications for any special treatment become equally so. Thus Mr. Curling tapped an ovarian cyst and also a hæmatocele from the rectum to relieve obstruction; Mr. Spencer Wells removed a large fatty tumor from between the vagina and rectum; a hydatid tumor might be tapped or otherwise treated; abscesses have been frequently evacuated from the rectum, and even from above the pubes; and, as we have seen, false membranes under favorable circumstances may elongate and in time cease to constrict.

The food of a patient suffering from stricture should be selected to suit the physical condition and requirements of the individual, in accordance with the stage of the disease. It should be easy of digestion, to avoid flatulence and colics; and should leave a minimum of fæcal residue. Sweetbreads, farina, and cream, are examples of what I have found best. Among laxative medicines, salines, especially the sulphates of soda or magnesia, have been generally preferred. For these may be substituted the Pullna or Bedford natural mineral waters; sulphur, alone or

combined with bi-tartrate of potash, is useful. Salmon speaks of castor-oil at night followed by an injection of warm water in the morning as his "usual treatment." Curling says that patients become accustomed to castor oil as they do to cod-liver oil, which latter, also, tends to promote soft stools. There is a general impression in the profession that belladonna, so highly praised by Trousseau and Bretonneaux, assists in promoting the action of the bowels in stricture, and it is often added to laxative pills. Esmarch speaks of it as "working wonders." I can only say that, by its narcotic quality (I suppose), it tends to relieve colics. Strong purgatives are to be avoided as dangerous to life.*

Enemata of tepid water carried beyond the stricture by the aid of a caoutchouc tube are most valuable; they should not be thrown in with force, but may be repeated indefinitely.

Bougies, so called because candles were formerly employed, should be slightly conical at the beak, eight or nine inches long, gently curved, and constricted near the base, so as to avoid, as much as possible, distention of the external sphincter while they

* *Case*.—"A few years since," says Salmon (*op. cit.*, p. 34), "I attended a gentleman whose wife died from the improper administration of violent purgative medicines. After several days of obstinate constipation, with other remedies, large doses of calomel mixed with drastic purgatives were administered for the space of two days and two nights, without any other effect than that of producing the greatest inclination and straining to pass her motions. In one of these attempts she suddenly exclaimed, 'Oh! something has given way in my left side!' Cold, clammy perspiration immediately succeeded, attended with faintness, which was speedily followed by delirium and death. Examination discovered that a cherry-stone had lodged in the sigmoid flexure of the colon, where the passage was almost obliterated by stricture, immediately above which, under the exaggerated peristaltic contractions caused by the purgatives, the gut had given way, its contents escaping into the cavity of the abdomen."

are in place; or, the bougie may be six inches long, conical at either end, so that it may be introduced entirely within the sphincter, and provided with a cord by which it may be withdrawn (Fig. 16). The external sphincter resents the continued presence of a foreign substance of any bulk in its grasp. The pain, spasm, and irritability thus produced are the principal sources of complaint attending the use of bougies. These instruments are usually too rigid and too



FIG. 15. (Mollière.)



FIG. 16.

straight. They should be made, preferably, of caoutchouc, rather soft than hard, with a surface as smooth as possible. As a lubricator to facilitate their introduction, I prefer vaseline (ung. petrolei). Bougies were popularized by English surgeons for the treatment of rectal stricture early in this century. A variety of substances have been used in making them: tallow, wax, rolls of cloth spread with diachylon or

mercurial plaster, prepared leather, horn, tin, and flexible ivory, but, mainly, the materials of which urethral bougies are made, and, more recently, caoutchouc. During the last century plugs of lint or charpie prepared off-hand (*mèches*), smeared with ointment, and introduced by means of a forked instrument (*porte-mèche*), were universally employed. Under the inspiration of Desault, who believed with Morgagni, Petit, and his more immediate contemporaries, that most rectal strictures were due to syphilis, mercurial ointments were very commonly used. In general terms many cures were ascribed to this topical treatment, which promoted suppuration, and was supposed to cause the stricture to melt away. It has been quite recently employed by Demarquay. The bougie acts upon a stricture of the rectum as it does upon a stricture in the urethra, first by mechanical dilatation, and then by exciting vital absorption of the recently organized material which constitutes its substance. It should be the aim of the surgeon to secure these effects of the remedy without exciting irritation. Rapid dilatation in either canal is necessarily attended by suppuration and an increase of exudation, which are more likely to be ultimately followed by aggravation than by permanent relief. The frequency of its introduction and the length of time the bougie may be left in contact with the stricture are to be determined by the tolerance of the patient, noting, when pain is complained of, whether it is traceable to the sphincter or to the stricture itself. At first the instrument should be retained but for a few minutes, and introduced again in from two to four days. Gross lays down the rule at five minutes every second day.

W. White* says that after a while "it may be used daily," and he gets to leaving the instrument in the rectum "eight or ten hours daily." This was, after the fashion of the day in England, extravagant practice, and suggests imaginary strictures. Only a healthy rectum would tolerate such a liberty. One can hardly imagine how an organic stricture could fail to be excited to ulceration. In my experience, the benefit derived from the use of the bougie has been greatest in the cases in which it has caused the least pain. Its regular and systematic employment, which is necessary in order to secure its best effects, will rarely be carried out persistently when the instrument is a constant source of torture. If the application of the bougie can not, therefore, be rendered tolerable by well-selected instruments, and gentleness and tact in their management, it would be better, if the case admit, to have recourse to other treatment. One point of practice has been established by experience: that it is inadmissible, under any circumstances, to employ force in the introduction of a bougie. Even in the manœuvres employed in exploring for stricture by a rigid bougie the bowel has been fatally perforated; and there are several recorded cases in which patients have inflicted mortal injury upon themselves. The careful surgeon will, therefore, always give a preference to moderately soft and flexible instruments, and warn patients, when allowed to introduce bougies for themselves—which is not, as a rule, a judicious practice—of the danger that may attend their use.†

* *Ut supra*, pp. 77, 78.

† Mayo (*op. cit.*, p. 163) relates a case communicated to him by Mr. Cross, of Norwich, who, however, was not the operator: "A young woman of delicate

The value of the bougie as a remedy for stricture has been, I think, on the whole, over-estimated. As an adjuvant to the knife in thin-edged valvular congenital strictures, where the mucous membrane of the gut alone is involved, we have good evidence that it has aided in effecting radical cures. It has certainly

frame was supposed to have stricture of the rectum, which led her medical attendant to employ, in no very gentle manner, a firm bougie. After much difficulty the instrument was made to pass, but the patient in a few hours became very ill, vomited, had a chill, and in about forty-eight hours died. The body was examined, and the coats of the bowel were found to have been perforated at about seven inches from the anus, and the bougie had entered the peritoneal cavity."

According to Bryant, the Museum of Guy's Hospital contains a preparation in which the colon was perforated by a bougie, thirteen inches from the anus, for an imaginary stricture; and a second, in which an O'Beirne's tube perforated the rectum five inches from the anus in an attempt to pass it up the healthy bowel to give relief in a case of obstruction after the reduction of a hernia. Curling has given a case in which the patient caused his own death, by perforating the bowel above the stricture.

Dr. Sands presented a specimen to the New York Pathological Society (*New York Med. Jour.*, June, 1870, p. 449), taken from the body of a gentleman of forty-five, who was under treatment by the bougie for a stricture, and on one occasion, insisting that it was not thoroughly introduced by the person in attendance, it was pushed onward, but without undue force, to its full length. Pain followed, with the usual symptoms of peritonitis, and death in a few days. The stricture was found to be entirely benign. At ten inches from the anus there was found a perforation through healthy tissue, and corresponding in size to the point of the instrument; also, an unusually sharp curve in the sigmoid flexure at this point maintained by old peritoneal adhesions, caused, as it was supposed, by previous contact of the point of the bougie, and favoring the final perforation. We can safely take the evidence of a strong believer in the efficacy of bougies as to the unpleasant effects which sometimes attend their use. "I have known," says Salmon (*op. cit.*, p. 60), "each introduction to be followed by cramps in the legs and thighs; . . . in another patient, considerable numbness, accompanied by pain, was felt in the right leg only while the instrument lay in the rectum. I have seen shivering fits produced by its introduction, and occasionally an inclination to sickness, but seldom fainting, such as is caused sometimes by bougies in the urethra. . . . I have known the irritation to be so great that patients have been alarmed, fearing inflammation of the bowels; . . . of all the annoyances, none is so troublesome as the irritation of the sphincter muscles." This he lessens by passing the bougie completely into the rectum, with a tape attached to it.

in very many instances prolonged life, in some cases almost indefinitely, by counteracting, so long as it has been assiduously employed, the tendency to contraction and entire obstruction; but, in tubular, fibrous, or cicatricial strictures, I doubt if its use has ever effected a radical cure. By radical cure I mean the restoration of the parts involved in the stricture to a soft, natural condition, as felt by the finger, without any tendency to recontraction or thickening after the use of the instrument has been entirely discontinued. Bushe (*op. cit.*, p. 237) expresses the recorded experience of Dupuytren and Colles: "I know of no patient who was able to leave off the use of the bougie for any time without an increase or return of his complaint." Verneuil says (*Bull. Soc. Chirurg.*, 1872), "Systematic progressive dilatation is capable of doing some good; but I have never seen a single case in which a radical cure has been effected by it." Mr. Curling (*op. cit.*, p. 146) considers these opinions as too unfavorable; but in the cases which he so skillfully treated, and records as cured, repeated incisions were employed as well as the bougie, and the conditions constituting radical cure are not specified. It is noticeable, in studying recorded cases, that they are often protracted throughout a series of years—five, seven, even twelve or more—and in some instances without growing materially worse. The bougie is often used from time to time, as necessity may suggest, and as often thrown aside. These cases are not rarely recorded as cured, and cured by the bougie. It is possible that in some their mild character is due to the slight extent to which the submucous layer of the rectum had been involved in the original lesion,

for it is undoubtedly true that, just in proportion as this layer of tissue takes on proliferative repair, subsequent stricture will be serious. In the great majority of cases of forming stricture, the passage of the fæcal mass acts as a source of irritation, keeping up the condition we call chronic inflammation, and aggravating the contractile tendency rather than acting as a bougie; and, in fact, the same remark is applicable to the bougie itself, unless employed with gentleness and reserve. The distention caused by the daily expulsion of a consistent fæcal mass has doubtless, after a certain period, a good influence in obviating contraction; it is to be recognized as one of Nature's conservative resources—acting as a substitute for the bougie. But, in the forming stage of stricture, i. e., the reparative stage of ulceration, the stools are better kept soft. Quain has an example of apparent cure, in one of the cases of mild character to which I have referred, which illustrates these points.*

The English writers, White, Salmon, and Copeland, who believed in "spasmodic stricture," held the use of the bougie in very high esteem; but we are

* In 1847 a gentleman of forty had typhus fever, during which, for head symptoms, a turpentine injection was administered. After this he had much irritability of the rectum with tenesmus, followed in a few weeks by difficulty in defecation. Two months later a stricture and a small unhealed ulcer were seen through the speculum. "The appearance of the gut was as though a ligature had been tied around it, leaving an opening apparently little more than the size of a large quill." Dilatation by bougie, self-introduced by advice of Quain and Liston, was employed, and after a time the motions were passed with less effort, and the discharge ceased; the bougie was then discontinued. In 1853, "the evacuations are of tolerable size, and the general health excellent." In 1854, Quain reports "fæcal matter of natural thickness; . . . nothing in his condition to remind him of his former malady; . . . the stricture having yielded apparently to the influence of the bougie and the *fæcal substance*, and accommodating itself to the function of the bowel" (*op. cit.*, p. 185).

hardly warranted, as the majority of their cases were seated beyond the reach of the finger, in receiving their evidence.*

In short, the reputation of the bougie as a remedy is undoubtedly due in part to the large number of imaginary strictures supposed to have been cured by it. In the treatment of stricture at the present day, the bougie is the first remedy that suggests itself, and it is more employed, by far, than all the other remedies for the disease; but, in my judgment, it is too much relied upon; and I suspect that its use is prolonged in a perfunctory way in many cases which are amenable to more efficient remedies.

In dense and tight strictures, with a view to more immediate relief than a slender bougie could offer, a sponge tent or a prepared strip of *laminaria* has been used for rapid dilatation as a preliminary to the ordi-

* The value of White's evidence—who says that, "in looking over a list containing one hundred and eighteen cases" (of stricture of the rectum in his own practice), "I do not recollect meeting with half a dozen out of that number that were within reach" of the finger (*Further Observations*, etc., Lond., 1822, p. 6)—I have discussed elsewhere. Salmon, also, shows the zeal of the specialist rather than the broader judgment of the scientific surgeon. If we are to believe this writer, his patients were frequently entirely cured of their strictures of the rectum by the use of the bougie; but, unfortunately, in all of the cases of cure which he relates, the existence of the stricture was assumed rather than demonstrated, for it was situated beyond the reach of the finger, and in many of them in the sigmoid flexure. In his robust faith in the bougie for strictures of the rectum, he even asserts that he cured with it strictures of the urethra—holding the belief that these were symptomatic of the rectal narrowing. The subjoined case (*op. cit.*, p. 99) illustrates the author's views. After quoting a letter from a patient relating his own case of gleet, commencing stricture, and swelled testicle, following a recent gonorrhoea, he adds: "When I first saw this patient, matter had formed in the prostate, and he was laboring under severe inflammatory fever. As soon as the part became tranquil, I examined the rectum, and discovered a stricture at seven inches, through which I could only pass a No. 4. In the course of three months, by persevering in the use of the bougie, he became perfectly well, and has continued so till the present period. In this case I did not examine the urethra."

nary bougie, and both of these remedies have a certain degree of efficiency; but the force required for their removal after swelling and the possibility of laceration attending it are counterbalancing disadvantages. Mr. Tuffnell, of Dublin, adopting what he calls "Hutton's railroad principle," succeeded in getting a "tubular bougie" through a very tight stricture as "on a guide," and, by introducing an injection through it, obtained relief in a case of obstruction of great importance. This is the device applied in urethral stricture by Wakeley. Tuffnell's "tubular rectal bougies" have a slender handle and a cylindrical extremity, so that they may be employed in dilating a stricture without at the same time distending the sphincter.*

The operation of divulsion, or forcible dilatation, which has been attended by good results in the urethra, has failed in the rectum. Nélaton's dilator (pictured in Sauri's thesis) has been tried and abandoned on account of the danger of extravasation of fæces into the pelvis, and also of peritonitis; and similar results have followed the use of other attempts at forcible dilatation.†

Ingenious contrivances have been devised for applying hydraulic pressure to effect rapid dilatation, on the principle of the "fountain syringe"; but they

* *Dublin Quart. Jour.*, August, 1860, vol. xxx, p. 53. Todd, in *Med. Times and Gaz.*, April 3, 1859, describes and figures an instrument of somewhat similar shape, which dilates the stricture without distending the anus.

† *Case*.—A married woman of twenty-eight, with a tight fibrous stricture of four or five years' duration, three and a half inches from the anus, was subjected by M. Le Dentu to forced dilatation by Matthieu's dilator. The instrument was being introduced very slowly, when suddenly something gave way, causing very sharp pain. The patient died of peritonitis. A minute laceration was found above the stricture. (*Bull. de la Soc. Anat.*, 1872, p. 494.)

are dangerous in consequence of the difficulty in measuring the force applied. Mr. Curling mentions a case in which "the surgeon, not estimating this power correctly, dilated until he burst the bowel, and the patient of course died of peritonitis." An instrument has been contrived by Dr. Whitehead to prevent this danger by sheathing the caoutchouc dilator with silk to limit its power.

This same danger of fæcal extravasation, with the addition of possible hæmorrhage not easily controllable, attends the employment of deep incision of a stricture from within, as by introducing a straight probe-pointed bistoury through its opening and cutting freely outward. The presence of the undivided sphincter in this proceeding distinctly favors fæcal escape.* The plan has, therefore, been adopted of substituting several shallower incisions.

The practice of "multiple incision," or "nicking," and the subsequent use of the bougie to keep the edges of the superficial cuts asunder, is, of all the palliative remedies of stricture, that which is in most general use. Mr. Curling praises it; indeed he details one or more cases in which he thinks, with the aid of bougies, he effected a radical cure. Gosselin, also, employs it by preference, and Esmarch expresses similar views. But, except in the thinnest "valvu-

* One of the few examples of radical cure by free incision from within was published in 1875 (*Am. Jour. Med. Sci.*, January) by my friend Dr. F. D. Lente, who faced the dangers of the operation successfully. I was told by Dr. House, the physician of this patient, in March, 1880, that she was perfectly well, and using no bougie.

Mr. Curling (*op. cit.*, 1879, p. 141) uses the following language on this subject: "Free and deep incisions are attended with very serious risk; and I know of one case in which, after two or three slight notches only, a large abscess formed behind the rectum and burst into the bowel above the stricture."

lar," or "diaphragmatic," strictures (such as those of the congenital variety), I should infer from what I have seen that this method of treatment necessitates persistent use of the bougie and repetition of the operation, and is, in the main, only palliative. Moreover, it is not entirely free from danger.*

The extreme pain caused by the bougie in some cases may be lessened by multiple incisions made under ether; and the same result has been attained by the local application of nitrate of silver to the stricture and adjacent surfaces. In a "tubular" or a tortuous and elongated stricture, multiple incisions are hardly applicable, except, perhaps, to facilitate the use of the bougie.

It has been claimed that stricture of the rectum as well as of the urethra may be cured by *electrolysis*, and the "dissolving" power has been brought to bear upon the disease, but as yet in few instances and without positive results.†

The destructive action of caustics is to be avoided

* *Case*.—A man of fifty-seven had suffered from colics, constipation alternating with diarrhœa, and other symptoms of stricture, for five years. At three inches above the anus he had a hard, resisting, tight stricture, with some little nodules at the point of constriction. The hardness of the stricture and the absence of odor and of any bloody discharge seemed to justify Gosselin in eliminating cancer, and he was accordingly cut, but the incisions did not pass the limits of the stricture tissue. He died, on the eighth day, of peritonitis and pleurisy with effusion. Extensive ulceration of the mucous membrane was found above the stricture (*Bull. de la Soc. Anat.*, 1874, p. 797). This man evidently died from hospitalism. His was a case for colotomy or for complete vertical rectotomy.

† Dr. Whitehead (*Am. Jour. Med. Sci.*, July, 1872, p. 114) reports a case in which it was tried, and failed. M. Leon Le Fort (*Bull. Soc. Chirurg.*, Paris, 1873, p. 62) tried this remedy upon a female patient at Lariboisière, in October, 1872. She was thirty, with a hard, uneven stricture of at least five years' duration, which would not admit the tip of the finger. A very weak apparatus was so constructed that it could be worn all night, and this was done for more than two months. The finger could now be freely introduced, and the patient left the hospital.

in the treatment of stricture of the rectum, where, as in the urethra, it has proved worse than useless. A Parisian surgeon tried caustic potass, in the form of Vienna paste, some years ago, but it was soon abandoned.*

It has been often asserted of late, mainly as an argument against the existence of syphilitic strictures of the rectum, that anti-syphilitic remedies have proved entirely useless even in cases of stricture where the existence of syphilis has been undoubted; and the assertion may have been in each case true. A stricture of syphilitic origin which has passed into the fibrous stage is no more amenable to the action of mercury or iodine than a periosteal node which has undergone ossification. But in the earlier stages of stricture from syphilis there is no lack of evidence of its curability by these remedies. I have elsewhere offered personal testimony on this point, and believe that future observations will confirm the soundness of these views. The diagnosis of stricture in a syphilitic subject includes, therefore, the question whether the parts involved are still in the proliferative stage or have taken on a fibrous, or cicatricial, change. If the latter can not be made out, the patient is entitled, in my judgment, to a judicious trial of mercury and iodine. The constant wearing of a *mèche*, smeared with mercurial ointment, in the stricture (the old French practice) tends to excite ulceration and suppuration. Unless the bougie be required to secure free discharges, I would advise

* M. Robert, at the Hôpital Beaujon (Perret's thesis, *ut supra*). The operation was cruelly painful in all the cases; in one, abscess followed, and no permanent advantage was secured in any.

you in these cases to avoid local treatment, and to rely upon the constitutional influence of the remedies.

Colotomy.—As a palliative in benign stricture, when life is threatened either by obstruction or by exhausting complications, and as a measure by which rest may be secured for the diseased parts, and even as a possible cure, colotomy of late years has taken rank as a remedy the possible value of which can not be ignored. The cases I have already cited, in which obstinate ulceration and forming stricture have been apparently cured, together with the results recorded by Allingham, Bryant, Erskine Mason, Heath, and others, furnish evidence as to the benefit that may be secured by it; and they also demonstrate the satisfactory practical working of the new outlet. They certainly show that, if otherwise successful, it does not render life intolerable: for, in two cases, women with artificial ani were married; and, in a third, a strumpet recovered so completely from an apparently desperate condition as to resume her trade. In England the operation has been subjected to frequent trial, and has gradually found favor; but on the Continent it has excited, as yet, less interest than in this country.*

* Mr. Allingham (*op. cit.*, edition of 1879, chapter on "Ulceration and Stricture") withholds full commendation of the operation, but mainly on the ground of his personal repugnance and of the "loathsomeness of their condition" afterward. And yet two of his female patients were married after the operation; and in the St. Thomas's Hospital Reports, 1870, he records the following satisfactory cases:

Case I.—Mary C—, twenty-four, with extensive ulceration and stricture. Incisions, followed by the bougie, had failed; ulceration subsequently perforated the vaginal walls, and "life was such a misery to her that she was ready to submit to anything." She was subjected to lumbar colotomy in November, 1867. At the expiration of ten months this patient went to America. "Before she left England the ulceration had quite healed, and the perforation into the vagina

In a majority of the recorded cases of colotomy, the operation has been done for rectal cancer, and mostly for the relief of intolerable suffering or impending death from obstruction, and with no hope

had also closed spontaneously." The artificial anus was perfectly sound, and performed its function well; the only thing that annoyed her was an occasional prolapse of the intestine after a motion. She was reported alive and in good health in 1870.

Case II.—In a delicate and unhealthy man of thirty-three, who had suffered from rectal disease for seven years, lumbar colotomy was done, in 1866, for a tight stricture with ulceration above it, complicated by abscesses and numerous fistulae, so that his "buttocks were riddled with sinuses." Free division of two fistulae, opening above the stricture and involving its substance, had failed, new abscesses having formed after this operation, and the stricture having become almost impassable. In 1870 Mr. Allingham writes that this man is now "quite well, and able to carry on his business. The ulceration and the sinuses have all healed, and the opening in the loin keeps perfect, solid masses of feces passing with freedom. He has very little trouble with the artificial anus, his bowels act once in the day, and an India-rubber air-pad prevents any involuntary action." (P. 14.)

Mr. Bryant (*Practice of Surgery*, Lond., 1876) has done this operation now twenty-seven times, and has in no case ever regretted performing it, "although," as he adds, "I have, in a large number, wished that I had had an opportunity of performing it earlier, for in no instance in which I have undertaken it have I failed to give relief" (vol. i, p. 683). One case, in which it was done for vesico-intestinal fistula, lived nearly six years after the operation, and died at seventy from heart-rupture. Another "is now alive, five years after the operation, and enjoying life, suffering very little inconvenience indeed from the artificial anus." Dr. Erskine Mason (*Am. Jour. Med. Sci.*, October, 1873) publishes six cases of colotomy, three of which were for benign stricture, ulceration, and recto-vesical fistula. Of these, one was relieved; in another, the operation failed through malposition of the colon; and a third was operated on *in extremis*, and died. In the eighty cases collected by Dr. Mason, colotomy was done for intractable ulceration and stricture in thirty; of these, twenty-three recovered with more or less relief, six died, and in one case the result is not stated. Dr. Mason remarks that, in a large proportion of the cases which he collected, the operation was not done till the vital powers had nearly become exhausted.

Mr. Heath (Clinical Lecture, in *Med. Times and Gaz.*, March 14, 1874), as the result of his experience in fourteen cases of colotomy, thinks that the operation is wrongly regarded as a last resource; that "it should be done before the vital resources are exhausted"; that in "otherwise incurable diseases of the rectum, such as extensive syphilitic ulceration, the disease is likely to get well, and the patients suffer exceedingly little inconvenience afterward from the artificial opening."

beyond temporary relief; but, in persistent simple ulceration and in cases of non-malignant stricture complicated with fistula—especially in the rarer cases, accompanied by such extreme distress, in which there is a communication with the bladder, and also in the cases in which there is an extensive suppurating surface above the stricture, a condition which so directly compromises life—there are good grounds for promising not only a prospect of relief, but a chance of cure.

The question whether the lumbar or the inguinal region should be preferred for the opening is yet to be settled by fuller observation. Heretofore the fear of danger from peritonæal lesion has led to a preference for the lumbar region; but this fear has been proved to be greatly exaggerated, and it remains to be determined which locality is the less inconvenient situation for an artificial anus. My own experience is rather in favor of the inguinal opening in the several phases of non-malignant disease, and in the male sex. The operation in this locality is rather more simple and easier of execution, and has been found to be equally free from danger. The patient is also less dependent upon others for aid in case permanent relief should follow: he can sleep upon his back, which is difficult while wearing a lumbar pad; and the prospect of subsequent closure of the new opening by an operation is rather more promising. Roehard adds, from personal observation, that the necessary compression about the waist of the female dress is a practical objection to the opening in the loin.

In lumbar colotomy, Bryant prefers an oblique incision (Fig. 17), in the line of the vessels and nerves,

as affording more room for manipulation, and tending to the prevention of prolapse. The original incision of Amussat was transverse, and that suggested by Callisen, vertical.*



FIG. 17.—This cut, which illustrates the line of the incision and the appearance of the artificial anus, "was taken from a patient of Sir W. Gull's, aged 64, that I operated upon in 1869 for vesico-intestinal fistula, and who died five and a half years subsequently (1875) from a ruptured heart. The gentleman followed his avocation without any discomfort." (Bryant.)

Colotomy, when indicated by the failure of other remedies, and when measures looking to a more radical cure are not feasible, should not be delayed too long. It has happened in many of the unsuccessful cases that the patient has failed to rally after the operation, in consequence of exhaustion from long struggling against the previous disease.

We have next to consider the measures by which

* In a paper on colotomy by F. Van Eeckelens (*Langenbeck's Archives*, vol. xxiii, 1878), who has collected 216 cases—198 lumbar and 18 inguinal—the mortality of the former is 12·7 per cent., and of the latter only 11 per cent., including a fatal case in the right groin in which the cæcum was opened. Of the eighteen cases of inguinal colotomy, five were done for vesico-intestinal fistula and benign stricture and ulceration, and of these one only was fatal—from "phlegmonous inflammation."

it has been proposed to effect a *radical cure* of benign stricture.

The first and most important of these is the *complete longitudinal division* of the stricture, the section comprising the whole thickness of the rectum below it, and including the two sphincters. The wound thus made includes a small portion of the rectal walls above the stricture, and, growing gradually deeper as it extends downward, presents its broadest portion below. We have seen that, in incisions into the stricture of any depth made from within the rectum, the presence of the sphincters offered an obstacle to the free passage of the contents of the bowel and favored extravasation. The object of the completeness of the section here proposed is to remove at once and in the freest manner all obstruction to the action of the bowels, and at the same time to radically cure the stricture by its thorough longitudinal section, in accordance with the principle first fully established by Reybard for the urethra.*

Reybard's operation has been limited in its application to the urethra by the danger of concealed hæmorrhage which attends it, except when the incision is made from without, as in the perinæal section. But the lower bowel is not, like the urethra,

* *Traité pratique des Rétrécissements du Canal de l'Ure'tre*, par le Dr. J. F. Reybard, Paris, 1855.

This work is the substance of an essay which received from the Academy of Medicine the great (D'Argenteuil) prize of 10,000 francs in the same year, on the recommendation of a commission consisting of MM. Bouvier, Gerdy, Grisolle, Huguier, Larrey, Laugier, Ricord, Robert, and Roux. The essay demonstrated, by experiments on the lower animals and on man, the curability of organic stricture of the urethra, without tendency to subsequent contraction, by complete longitudinal section of its substance, and the development of an "intermediary cicatrix" between the lips of the deep incision, kept asunder during the process of healing.

surrounded by erectile tissue, and the practical utility of Chassaignac's *écraseur* and Paquelin's thermo-cautery has emboldened surgeons to apply Reybard's principle, carried out in its fullest extent, to the treatment of stricture of the rectum. This is the operation now on trial. It is also designated "external rectotomy"—to distinguish it from scarification from within, known as "internal rectotomy"—and "vertical" and "linear" rectotomy.

There is but little doubt that strictures of the rectum have been heretofore more or less completely divided, and even unwittingly, in laying open deep fistulæ by the knife. There are not a few cases on record in which a stricture has been first discovered while operating for fistulæ in ano, which were really the consequence of the preëxisting coarctation; and the division of a fistulous track which opens into the bowel above a stricture involves, of course, division also of the stricture. Mr. Luke long ago devised a method of avoiding the danger of hæmorrhage in the deep section required in this complication: his device consisted in introducing a cord through the fistula, bringing it out at the anus, and attaching the ends of the cord to a screw tourniquet, which was gradually tightened. This was a foreshadowing of the *écraseur* now used for the same purpose. But the first formal suggestion of *complete longitudinal section* as a remedy for stricture of the rectum was made by Mr. George Murray Humphry, of Addenbrooke's Hospital, at Cambridge, England, who has placed on record two cases on which he operated in this manner.* His first case—a soldier with a tight, fibrous stricture, at-

* *Association Medical Journal*, 1856, p. 21.

tributed to dysentery contracted in India, and complicated with several fistulæ, one of which communicated with the urinary track—was subjected to operation in 1852. The patient was very much benefited, but left the hospital, and was lost sight of. A second case was in a syphilitic woman, in whom also he completely laid open the gut for three or four inches, including the sphincters. Mr. Humphry, in proposing to treat stricture of the rectum in this way, alludes to no precedent, but bases his proposition on the "good results following longitudinal incisions in urethral stricture." He may have been inspired by Reybard's prize essay, published in the preceding year. The next operation of this kind of which I have any knowledge was done by M. Verneuil, of Paris, in 1863, upon a robust woman with a number of fistulæ, and a stricture—which was only discovered after some of the fistulæ had been laid open by means of the *écraseur*. The division of all the fistulæ, including that of the stricture, at several operations, resulted, in about four months, in a thorough cure.*

* I extract this case, as related by M. Verneuil himself, from a paper read before the Surgical Society of Paris in October, 1872 (*Bull. de la Soc. Chirurg.*), on the treatment of rectal stricture by what he denominates "vertical rectotomy." He speaks of the operation elsewhere as "linear" rectotomy, because he preferred the "*écrasement lineaire*" of Chassaignac to the knife. "A robust woman of thirty had suffered from trouble at the fundament for several years, but, through fear of an operation, had never permitted herself to be examined; finally, through pain and inability to sit, she was forced to ask for aid. No less than twenty fistulous tracks were discovered traversing the perinæum, thighs, groins, and lower half of the labia majora. Besides the corpulence of the woman, there were extreme induration and thickening of the parts involved in the disease. I had never seen exactly such a case, and at first did not suspect the presence of a stricture. Although there was great difficulty in getting the finger far enough through the anus to reach the probe when introduced into the fistula, I attributed this to a more than usually woody induration of the ordinary kind. The fistulæ were so long and the wounds made in dividing them so deep and ex-

The good result in this case encouraged M. Verneuil to repeat the complete vertical section of the stricture together with the rectal walls—to which he had been thus led, and which, by the aid of the *écraseur*, he had so successfully accomplished—in a patient confided to his care the next year (1864). This was also a bad case, of long standing, in a broken-down, syphilitic man of forty, with over a dozen fistulous openings in the perinæum and scrotum, who had been already subjected to operation for the fistulæ by the late M. Follin without success, and also apparently without suspicion of the presence of stricture. The same method resulted here in a radical cure of the stricture, as well as of the fistulæ, which was verified by an examination two years afterward. This success led to the use of complete vertical section of the rectal walls for the radical cure of simple uncomplicated stricture, and also as a substitute for colotomy in threatening obstruction; and, up to 1872, M. Verneuil reports ten cases. Of these, three were cancerous, and the operation of complete longitudinal section was undertaken as an alternative for extirpation, or colotomy. In one of these cancerous cases, a hos-

tensive, although entirely within the limits of the subcutaneous tissue, that I contented myself with only laying open the fistulæ on the right side. A month later I laid open the remainder. There was already an immense improvement, but the cure was by no means accomplished. There remained a track which extended upward outside of the rectal walls for several centimetres, and there was still a great deal of deep induration, so that it was almost as difficult to introduce the finger as it had been at first; but, by patience, I succeeded in getting a probe through this track and bringing it out into the rectum more than five centimetres (two inches and a half) from the anus. As a result of this success, I was able, at a third operation, to carry the chain of an *écraseur* through this track, and accomplish the division of a mass of exceedingly hard tissue. This time a cure followed, and, four months from the first operation, all the wounds were healed. She has since remained perfectly well."

pital patient, the operation was followed by peritonitis, and death on the sixth day—the only fatal case. Of the other cases, only two are spoken of as radically cured; in two, the whole extra-rectal induration surrounding the stricture could not be included in the section, and bougies were subsequently required; but in all a sufficient degree of prompt and satisfactory relief was secured, by an evidently safe process, to justify its continued trial as a promising resource. Mr. Allingham (*op. cit.*, last edition, 1879) says he has performed this operation in sixteen cases, but always with the knife. He adds, "One thing I have learned in my long practice, not to fear any hæmorrhage from the rectum. . . . Many of these patients have done well, and I have had permanent cures, but others have failed, and I have seen a return after even three or four years. . . . So rapidly beneficial is this proceeding that, in forty-eight hours, I have seen night-sweats arrested, and a patient, who seemed about to die, rally, and eat and drink and get well from that moment; morbid discharges, instead of being absorbed, run out, and the patient is not poisoned" (p. 234).*

* M. Panas, in connection with the discussion on M. Verneuil's paper, relates two cases, one of which is very satisfactory, in which he did complete section; and says that he saw Nélaton do this operation in 1865. But Nélaton does not mention this mode of treating stricture in what he has written on this subject. M. Panas expresses a preference for the use of the knife, and describes the operation in very much the same language as Mr. Humphry uses in describing the proceeding he employed in 1852.

I observe that Mollière, Panas, Forget, and other French surgeons, in the discussion on stricture of the rectum at the Surgical Society of Paris, in 1872, speak of the English surgeon Stafford as the originator of the cutting operations for the cure of rectal stricture. This seems to be an error. Stafford's cases were treated by limited incisions, made from within by means of an instrument which he had invented for the purpose—a modification of his urethrotome.

In May, 1878, I was consulted by Mr. F., twenty-eight years of age, whose general health was suffering from obstinate constipation, with colics, alternating with diarrhœa, caused by the presence of a moderately tight stricture seated about two inches from the anus. He had been drafted into a cavalry regiment during the late war, and, finding himself disabled from duty by piles and prolapse, from which "he had suffered since childhood," submitted to an operation for their cure by an itinerant specialist, who employed a liquid caustic (probably nitric acid) very freely to control hæmorrhage both at the operation and again on its recurrence some days later. His existing malady was cured, but constipation began to trouble him seriously a few years afterward. He had used bougies, but they caused much pain, and gave only temporary relief. I advised complete longitudinal division of the stricture. This was accomplished under ether, on the 28th, by Dr. Keyes, under my direction. A slightly curved, sharp-pointed needle in a fixed handle was entered at the side of the anus, and far enough from its margin to clear the external sphincter, and carried upward outside of the rectum, and then into its cavity above the stricture. The lig-

When his paper on this subject was read before the Medico-Chirurgical Society, Mr. Cæsar Hawkins remarked that he (Hawkins) had been for twenty years in the habit of doing the same operation, but that he preferred to use Sir Astley Cooper's hernia knife. Stafford, whose first case was published in the *Lond. Med. Gaz.*, vol. xiv, p. 607, certainly did not divide the sphincter. Copeland (*Observations on the Diseases of the Rectum, etc.*, Philadelphia, 1811, p. 44) says: "In the indurated annular stricture, which has for a long time resisted the introduction or the enlargement of the bougie, I have more than once introduced a probe-pointed, curved bistoury, and divided the thickened parts on that side of the rectum which is contiguous to the os sacrum; and I have frequently seen the late Mr. Ford perform the same operation." Wiseman divided a contracted gut three or four times in the same person.

ature was then, by forcing the index through the stricture, with some little difficulty disengaged and brought out at the anus. It was then attached to a wire, one end of which was withdrawn, with the needle, through the outer track, and, the two ends of the wire being made fast to the *écraseur*, after incising the included integument, the inclosed mass of tissue was cut through. There was a smart gush of blood—about as much as if the knife had been used—and a sponge, secured by a stout double cord, was passed up and brought to bear upon the cut surfaces, and the cord was tied over another sponge on the outside. This gentleman, after voiding an immense amount of retained feces, and after pretty severe febrile reaction, got well enough to drive out in a fortnight, rapidly improved in health, and has never since experienced any trouble with his rectum. At my last examination the parts were all soft and flexible, and I could just recognize the ridge left by the longitudinal division. He uses no bougies. M. Verneuil, who has become the principal advocate for this method, and who has, in a certain sense, made it his own, prefers, when a fistulous track extends above the stricture, to introduce the chain of the *écraseur* through it; when there is no fistulous track, he makes the section in the median line posteriorly, where there are fewer vascular trunks, introducing a trocar in front of the point of the coccyx. I have found, however, that the external sphincter is slower in uniting after division on the median line, and should give preference to a lateral section. From what I have seen of its action, I should also prefer to use, as far as possible, the knife of Paquelin's thermo-cautery, at a cherry-red heat, for the

division of the parts; and to make the section from within, beginning below, in order to gain more room, and trusting to specula and a box-wood spatula for sufficiently displaying the parts as the stricture is approached. By dividing the external sphincter first, and extending the incision gradually upward by repeated strokes of the cautery knife, the interior of the bowel and the stricture can be brought fairly into view. A great advantage of the cautery knife is that it leaves the divided surfaces retracted and covered with an eschar, so that they are saved from faecal contact until coated by granulations; and little or no subsequent dressing is required—simply syringing the parts with a weak solution of the permanganate of potass being sufficient.* In cases of stricture complicated with fistula, I doubt the necessity of always laying open the fistulous tracks after complete longitudinal division. They will certainly sometimes get well spontaneously. In a case in which Dr. L. A. Stimson did this operation, by my advice, upon a woman with a well-developed stricture and numerous fistulae, the latter were left untouched, and in a few weeks they had all dried up and healed without further interference. In fact, the patient left the hospital with scarcely a trace of her former disease. In

* I learn from Mr. Allingham (by private communication) that in prolonged rectal operations he has found it advisable to have always a second thermocautery knife ready for action. The blade, while in use, as I have myself observed, tends to become clogged by carbonaceous incrustation by the blood and tissues, and a little delay is required to clean it, which may be avoided by having a second apparatus ready for use. Cleansing of the incrustated blade is best effected by raising its temperature as nearly as possible to a white heat for a few seconds to burn off the crust, and aiding the process by a few touches, in the way of scraping, from the cold blade of a common knife. A cherry-red heat is the best for dividing the tissues.

this case there were strong grounds for suspicion of the existence of the syphilitic diathesis; and the patient's improvement took place while under anti-syphilitic treatment.

Where the *écraseur* or the knife, for any reason, can not be employed, complete division of a stricture may be effected by constriction by the caoutchouc cord. Allingham's instrument for fistula is well designed to facilitate its introduction, which, if a fistulous track opening into the gut above the stricture be present, might be accomplished without loss of blood. In a deep, blind, external fistula, not communicating with the rectum above a stricture, it would be proper to complete the fistula, and use it as a route for passing the chain of an *écraseur* or an elastic cord. This has been done by Trélat by the aid of an instrument he devised for the purpose.

On the whole, then, I feel justified in recommending complete longitudinal section, when feasible, as an operation of fair promise as regards radical cure in a certain proportion of cases of benign stricture. As an alternative for colotomy, in obstruction by benign stricture, it offers not only an equal promise of immediate relief to the obstruction, without the penalty of an artificial anus, but, besides this, a good chance for a permanent cure. You will bear in mind, however, that to secure the latter result the operation must be thoroughly done.

Amputation, or *excision*, of the lower end of the rectum for benign stricture seems at first glance as hardly worthy of consideration as a remedy. In former days, when the distinction between benign and malignant stricture was yet unrecognized, the scalpel,

as we may infer from Morgagni, was the only known remedy; but there is no record of its employment. Esmarch * speaks of excision in terms of implicit approval for cicatricial strictures not farther than two inches from the anus, and describes an operation done by Dieffenbach in such a case, in which the gut, after complete excision of the stricture, was brought down and stitched to the sphincter. Of late years the operation has been a good deal employed for cancer, and quite recently for doubtful cases, in which the nature of the growth threatening obstruction has been uncertain. Mr. T. Holmes † describes a case in which he removed the lower end of the rectum, in a woman, at St. George's Hospital, for a morbid growth which prevented defecation, supposing it to be epithelioma, but which, on subsequent examination, was found to be "apparently adenomatous." This surgeon expresses a favorable opinion of the operation, which has been comparatively rarely done in England. Now, adenoma in the rectum is the debatable ground between benign and malignant growths, in which surgery is waiting upon histology; and it is in cases of this kind, of which the nature is as yet unsettled, that the operation of excision may become a judicious procedure. Its feasibility and safety have been demonstrated, as Mr. Holmes says, "by German and American surgeons." I have witnessed, certainly, very satisfactory results, even after entire removal of the sphincter with several inches of the bowel, in three instances in my own experience. In view of the very

* *Die Krankheiten des Mastdarmes und des Afters*, in the *Handbuch*, etc., of Pitha and Billroth, 1872, p. 114.

† *Proceedings of London Clinical Soc., Lancet*, March 9, 1878.

comfortable condition of a young woman now under observation, whose sphincter was thus removed in 1878,* I should be disposed to hold this operation in reserve for cases in which there is any doubt as to the presence of a malignant element, as an alternative for "*complete longitudinal section*," and as preferable, in such cases, to colotomy.†

I have notes of two cases in which the lower end of the rectum has been removed for benign stricture.

One of these, a syphilitic woman of twenty-three, was operated on by M. Péan, at Lourcine, in 1867 (*Bull. Soc. Anat.*). The bleeding is reported as trivial, and the patient was doing well and retaining her stools six weeks after the operation. The specimen was examined by Ordóñez, who found little beyond dense, fibrous tissue, and who mentions especially the presence of elastic fibers.

Another case is simply referred to by M. Malassez (*Bull. Soc. Anat.*, 1872, p. 333) as a case of cure of simple benign stricture which he had seen follow extirpation of the rectum by M. See.

There is a case of excision by Dr. Lowson (*Lond. Lancet*, April 12, 1879), in a woman of thirty-four, with a simple stricture of eight years' duration. A ring was removed after splitting the sphincter toward the coccyx, and the stump of the bowel was drawn down and stitched to the sphincter with cat-gut. About four months after the operation, it is noticed that a "considerable amount of cicatricial stricture has formed around the seat of the operation,

* *N. Y. Med. Record*, July 13, 1878, p. 22.

† See, also, an excellent paper by Dr. Roberts, of Philadelphia, in the *Med. and Surg. Reporter* of June 9, 1877.

and some contraction has taken place"; and the parts are still painful, and the power of the sphincter is defective in diarrhœa.

I have seen better results than this where the sphincter has been entirely removed.

I may add that a *plastic operation*—in which, after splitting the rectum and stricture, a flap of external integument is inserted into the gap—has been attempted by Dieffenbach, and more recently by M. Verneuil, who lost his patient by erysipelas. M. Verneuil expresses his regret that he had not relied upon complete vertical section in this case.

LECTURE XI.

CANCER.

THE subject of cancer of the rectum possesses few attractions in the way of certainty in alleviating the disease, and still less in the prospect of its cure. It has held an unhappy preëminence as one of the most painful and fatal forms of that much-dreaded scourge of our race. To the credit of our profession, there have been increasing efforts during the past ten years to better this forlorn prognosis, and this circumstance adds interest to its study to-day. The proof that thorough surgical operations can be accomplished by novel methods for its extirpation, with very little danger to life, and the establishment of colotomy, after fuller trial, as a hopeful palliative measure, are the principal results which have been attained. Meanwhile the microscope has taught us the apparently slender differences that exist between benign and malignant affections of the rectum—as, for example, between simple polyp and commencing cancer—and it has added more weight to the probability of the local origin of the disease, and consequently to the greater hopefulness of operations undertaken for its early removal.

The principles of surgery teach us that the essence of the disease popularly known as cancer consists in a perversion of the nutrition and growth of a part,

whereby an altered form of tissue takes the place of the natural substance of the body—usually in the shape of an outgrowth or tumor. There are certain organs of the body especially liable to this kind of morbid growth, as, for example, the uterus and the mammary gland of the female. The lower end of the intestinal canal is a locality which it often selects. Baillie asserts, in his *Morbid Anatomy*, that the greater number of glands at the lower end of the rectum predispose to cancerous disease in this locality. In the statistics of Tanchou, comprising over nine thousand cases of cancer in all parts of the body, cancer of the rectum stands fifth in point of frequency.*

Mr. Allingham, in his analysis of four thousand consecutive cases of rectal disease, observed in the out-patient department of St. Mark's Hospital, London, has but one hundred and five cases of cancer. It is certainly a not uncommon disease, and it occurs in all classes of society.

Almost invariably making its appearance as a new outgrowth, cancer, when it invades the rectum, usually tends to obstruct the caliber of the canal. Although the new growth is more or less rapid, its vitality is essentially weak; and its natural course is to fall, sooner or later, according to the amount of mechanical violence to which it is exposed, into a condition of ulceration or molecular gangrene, attended by watery and bloody discharges, and to terminate life by local increase through invasion of

* The total number of cases in Tanchou's *Memoir on the Relative Frequency of Cancer*, presented to the French Academy, is 9,118. Of these 2,996 were of the uterus, 2,303 of the stomach, 1,147 of the female breast, 578 of the liver, and 251 of the rectum. (Walshe, on *Cancer*, with additions by Warren. Boston, 1844, p. 347.)

neighboring parts, and a general contamination of the whole organism. Hence, the symptoms of cancer of the rectum usually present themselves in the shape of obstructive growths or tumors, attended by unnatural, sanious, or bloody discharges. Difficulty in defecation, or costiveness, with its attendant distress, and, perhaps, the protrusion at the anus, while straining, of something that exudes more or less bloody discharge, lead to the impression on the part of the patient that he is troubled with piles; and, at first, this impression may be shared by the medical attendant. Later, persistent discharges of blood and slime, with increasing difficulty in evacuating the contents of the bowel, cause suspicion of the existence of more serious trouble, possibly of stricture; and it is only after passing through these phases of doubt and uncertainty, which may occupy months, that the increasing urgency of the symptoms compels a surgical exploration, and the true nature of the affection is finally discovered. Meanwhile, however, there is in most cases a marked alteration of the patient's general health, suggestive of the graver character of the existing disease; and it is this circumstance which has usually led to a more thorough investigation.

Loss of flesh and strength, poor appetite, unsatisfactory sleep, with a sallow complexion, an unnaturally frequent pulse, a continual "needing to stool" attended by teasing tenesmus, are the most common evidences of the presence of this disease; and, if to these you add a more or less constant sense of weight or uneasiness in the rectum, aching pain between the hips, flatulence and gastric distress, with an expression of countenance indicating anxiety and habit-

ual suffering, you will have a group of symptoms very characteristic of cancer of the rectum.

With these general indications of the existence of serious disease, you will find, on local exploration, that the lower end of the bowel, almost always within reach of the finger, is reduced in its caliber, and that its walls are thickened, sometimes uniformly, but more frequently by lumpy masses which have a hardish, nodular, cartilaginous, or warty feel. It may be that there is only one of these tumors, and that it is seated on one side of the gut, in front, or behind, the walls of the bowel feeling elsewhere soft and natural; but more frequently the finger receives the impression of



FIG. 18. (Agnew.)

passing into a more or less irregularly contracted circle, or ring (Fig. 18). The exploration is almost always painful, for the parts are much more sensitive than in benign diseases of this region; but it can not properly be dispensed with.

There is occasionally glandular enlargement in the groin, and in an advanced case you will be sometimes able to detect secondary cancerous deposits, in the shape of nodular eminences, along the anterior margin or projecting upper surface of the liver, or, perhaps, general enlargement of this organ, and, possibly, evidences of the presence of the disease elsewhere. You should not neglect to feel carefully in the iliac fossæ, particularly the left, for cancerous growth or tumor involving the upper portion of the rectum might be recognizable from this quarter; but bear in mind, also, that the sigmoid flexure of the colon is liable to be distended with solid fecal accumulation where there is obstruction in the rectum below.

When the middle or upper portion of the rectum is the seat of the disease, and it can not be certainly recognized by digital exploration, general symptoms of cancerous cachexia are to be sought for; the suffering is usually less than when the pouch of the rectum and the parts nearer the anus are involved; and here deep-seated pain over the center of the sacrum may be a significant symptom.

I will shortly add details to this sketch, but meanwhile we must examine the histological anatomy by which the several varieties of cancer are to be recognized; for it is on this basis only that its symptoms, diagnosis, and treatment can be advantageously studied.

Cancer of the rectum has been usually described as occurring in one of the three forms—*epithelioma*, *malignant sarcoma*, or *scirrhus*; and this is undoubtedly true. But the closer histological scrutiny of late years has made it evident that, in nineteen cases

out of twenty, the disease makes its appearance in one of the varieties of epithelioma. Soft cancer is encountered perhaps once in twenty cases; true scirrhous, or hard cancer, is very rare.

Of epithelial disease, the usual wart-like growth, so frequently met with in the lip, which shows pavement epithelium in its internal structure, is far less common than that which consists of the columnar or cylindrical cells of the minute intestinal glands known as the follicles of Lieberkuhn. The former is confined to the cases which take their origin externally in the integumental structures at or near the anus. I had a case in my clinic some years ago, in an old man, in whom about one third of the anal orifice was occupied by a dry, hard, lumpy growth resembling ordinary cancer of the lip. In another case, which I saw in the adjoining hospital with the late Dr. Hewit, a boy of twenty-one had a similar growth involving the anus, and it was advancing internally. In this case there was an enlarged and indurated lymphatic gland in the groin near the tendon of the *adductor longus*. In a case recently subjected to extirpation at the New York Hospital, by Dr. G. A. Peters, the disease is described as "a warty tubercular growth extending about half an inch from the margin of the anus externally, and from one and a half to two and a half inches up into the bowel, and nearly surrounding it."* A tumor consisting of pavement epithelium presents a lobulated surface, and its internal structure is made up, in most cases, of flat cells arranged in nests, with a loose fibrous stroma.

When epithelioma begins within the rectum, it

* *N. Y. Med. Rec.*, July, 1878, p. 23.

takes its origin in the follicles of the mucous membrane, and consists of cylindrical epithelial cells. The tubular follicles at first seem to undergo hypertrophy; they project upon the free surface of the mucous membrane, and, at the same time, grow more deeply into the submucous connective layer, budding, as it were, and sending off branches. Later, isolated tubular glands, forcing their way through the *muscularis mucosæ*, make their appearance in the submucous connective tissue, and provoke embryonal cell-proliferation in their vicinity. Their cylindrical epithelial cells also undergo change in size, shape, and arrangement; they often tend to swell, and become distended with a mucoid substance. This is most probably what is called "colloid" degeneration; it was formerly supposed to constitute a separate variety spoken of as "colloid cancer." Thus, Cruveilhier asserts that the most common variety of rectal, and, indeed, of intestinal cancer, is the "colloid"; and in this he has been followed by many.*

* Esmarch speaks of the "jelly-colloid-mucous cancer" (alveolar) as a special variety of cylindrical-celled epithelioma. He adds that it is seldom found in other parts of the body, but is relatively frequent in the rectum and intestinal canal as a whole. Its exquisite alveolar structure can usually be recognized by the naked eye. In the alveoli is a peculiar jelly-like mucous material resembling swollen sago. "It is due," he says, "I presume, to the mucoid degeneration of the protoplasm of the cylinder epithelial cells." The consistency of these tumors, according to this writer, varies greatly according as the colloid alveoli or the stroma is most developed. There is a soft and also a hard variety; the latter has a homogeneous surface, on section, like a hard sarcoma or scirrhus. They are pedunculated but rarely; usually extensive portions of the rectum wall are degenerated, and in exceptional instances the gut is transformed into a stiff tube, united to adjoining parts by tough connective tissue. Ulceration follows, and colloid fragments may be passed from time to time at stool. Esmarch concludes with the remark that, in all three forms of epithelioma of the rectum (i. e., the flat-celled variety, the cylindrical, and the colloid conversion of the cylindrical-celled growth), secondary cancer very frequently forms, as the disease progresses, in the neighboring glands or peritonæum. (Pitha and Billroth, *ut supra*.)

Cylindrical-celled epithelioma appears at first in the form of one or more well-defined thickened plates or patches on the internal surface of the gut, which gradually grow into its cavity, forming tumors, which often betray a tendency to become pedunculated or constricted; but they always, sooner or later, manifest a disposition to spread from their bases of attachment. The tendency to pedunculation marks the histological relationship of this disease to simple *adenoma*—the polyp of early life; and, in this view, it is a feature of good augury, indicating the least malignant phase of cancerous disease, and offering usually the best prognosis in case of entire removal. Pedunculation in a rectal tumor has been assumed to be a diagnostic mark of adenoma, as distinctive from cancer; but I have seen, in several instances, polypoid growths in the adult which returned after removal as undoubted epitheliomata, and which, in fact, had showed in the first instance under the microscope the characteristic features of the latter disease. The relation of cylindrical epithelioma to simple polyp is analogous to that existing between pavement-celled epithelioma and common warty growths, or papillomata; and there is no easily drawn line of demarcation between them, histologically. In view of this close relationship between affections so entirely benign and cancer, it is very desirable to be able to recognize the distinguishing marks, if we can, which stamp the malignant quality. As far as I have observed the features which characterize cancer in this form, they are: 1st, the tendency of the epithelial elements to invade sound, healthy tissue, and to make their appearance in an abnormal locality, as, for ex-

ample, in the connective substance of the muscular coat of the intestine, and, in the form of secondary deposit, in the neighboring lymphatic glands, the liver, or the lungs; 2d, the tendency in the epithelial cells, especially those of the cylindrical variety, to depart from the normal type, as regards size and arrangement, in relation to their fellows; 3d, the rapidity of advance, and the proneness to ulceration, of these abnormal growths; and, 4th, the general cachexia which attends their progress. The early recognition of these features is important; and, for the first two, microscopical examination of a fragment of a new growth, if accessible, is very desirable.

My friend and colleague Dr. L. A. Stimson, who has made an able histological study of rectal cancer, mainly from cases which we have seen together, recognizes hypertrophy of the Lieberkuhn follicles as the first in a series of morbid changes in cylindrical epithelioma, and this is followed by the development and multiplication of new follicles in their immediate neighborhood in the submucous tissues. See Figs. 19, 20, 21, 22, 23, 24, which are explained below.*

* The following case, reported by Dr. Stimson in a paper in the *Archives of Medicine*, August, 1879, entitled "A Contribution to the Study of Cancer of the Rectum," with his drawings from nature of the morbid growth, possesses additional interest, inasmuch as the patient is still under observation:

"Case III.—Under the care of Drs. Van Buren and Keyes. Bridget K—, an unmarried woman of thirty, presented herself with a history of protrusion at stool, eighteen months previously, accompanied by slight loss of blood and pain in the back. Her physician found the protrusion to be a polyp, and removed it. During the next six or eight months she remained well; then the backache, discomfort in the rectum, and blood in the stools gradually reappeared, and she was sent a year later to Dr. Van Buren for advice. He found 'several elevated patches with irregularly granulated surfaces, the largest toward the vagina, and nearly surrounding the rectum, at from an inch and a half to two inches and a half from the anus; the parts movable; no other evidence of disease; general condition good.' The patient's mother was suf-

fering at the time with, and died soon afterward of, cancer of the rectum. The diagnosis of epithelioma was made, and its removal advised.

"Operation.—May 20, 1878, Dr. Keyes removed the lower three inches of the rectum, including the anus, and stitched the edge of the gut to the skin, using antiseptic precautions and dressings, and keeping the lower end of the rectum distended during healing by means of an inflated, egg-shaped rubber bag traversed by a rubber tube open at both ends to provide for the escape of flatus. The bleeding was moderate, and recovery prompt.



FIG. 19.—Horizontal section from surface of tumor. (Stimson.)



FIG. 20.—Hypertrophied follicles. (Stimson.)

"The patient has remained perfectly well ever since, and apparently suffers no inconvenience from the loss of the sphincter. Dr. Van Buren says, 'She has a natural sensation of desire, and a full, painless evacuation follows; after this she goes around as usual, protected only by a simple compress and napkin.'

"The specimen, examined after hardening in alcohol, shows an ulcerated, finely granular surface beginning just above the anus, and measuring two and a half centimetres longitudinally by four laterally. This surface is bordered above and on the sides by a coarsely papillary, cauliflower-like, overgrown ridge (Fig. 19), of irregular outline, reaching, at its greatest breadth, a point two



FIG. 21.—Semi-diagrammatic—to show persistence of *muscularis mucosae* to edge of tumor, and round-celled infiltration of submucous tissue. (Stimson.)

centimetres higher up the gut than the ulcer. Section through the ulcer shows that it is not more than five millimetres thick (after hardening); the surface of this section is a uniform gray, without alveoli or mottling, and rests upon the muscular coat.

"A section taken from near the surface shows irregular branching tubules lined with well-formed cylindrical epithelium (Fig. 19). The tissue underlying

the ulcerated surface is composed of young connective tissue, in which are imbedded irregular tubes, mostly of small size, lined with double or triple rows of irregularly cylindrical and globular epithelial cells resting directly upon the stroma. The stroma is composed of fusiform, oval, and round cells with occasional large, fully developed fibers. Some of the culs-de-sac are lined with epithelium which is not in the least cylindrical, but is globular or irregular, like much of that in Case II.



FIG. 22.—Section from center of tumor. (Stimson.)



FIG. 23.—Dissociation of muscular fibers by new connective-tissue cells. (Stimson.)

"A section, comprising the upper edge of the ulcer and the adjoining healthy mucosa (Fig. 21), shows that the first change is the enlargement in length and diameter of the tubes; embryonal elements soon appear between the tubes and in the underlying layer of connective tissue, and, when the border of the ulcer is reached, this embryonal tissue is very abundant; within it are contained tubes lined with cylindrical epithelium, of various sizes, and running in various directions, while underneath the muscular coat is nearly doubled in thickness. At a



FIG. 24.—Section of mucous and submucous layers, showing hypertrophied follicles of mucous membrane (*a*), and new adenoid growth in submucous tissue (*c, c*). (Cripps.)

short distance within the edge, the surface of the ulcer is composed almost exclusively of embryonal and half-formed connective tissue; only a few tubes are found near the surface, but in the deeper layers they are crowded thickly together. The muscular coat is much thickened and broken up into bundles separated by vessels and new connective tissue. This dissociation is carried in places almost to the extent of separating individual fibers (Fig. 23).

"The *muscularis mucosae* persists under the thickened mucosa beyond the edge

Both the hypertrophic and the heterotopic features of cylindrical epithelioma are well shown in Fig. 24.*

Malignant sarcoma, or soft cancer, when it affects

of the ulcer until after a large quantity of embryonal cells have been formed underneath it in the submucous connective tissue; then it disappears, and the tubes extend suddenly down into this embryonal tissue and vary greatly in size; the regularity of their epithelium is lost, and the cells are smaller, crowded thickly together, globular, and opaque" (Fig. 21).

"Section through the papillary portions shows an unbroken, not much thickened, muscular coat, upon which rests the greatly thickened mucosa thrown into folds and papillæ by its own increase" (Fig. 22).

* From Cripps, on *Cancer of the Rectum*, etc., London, 1880. This very recent observer states, at p. 63, that the figure represents a section of that form of cylindrical epithelioma which tends to spread horizontally rather than to project from the surface of the gut as a tumor. "It has been cut at right angles to the bowel cavity, close to the margin of the growth, before the superjacent mucous membrane had been destroyed by ulceration. The section displays the mucous membrane and the new adenoid growth in the submucous tissue. The follicles (*a*) in this portion of mucous membrane are three or four times their normal length. Their diameter, however, is but slightly increased, their lining epithelium is large, the boundary line between the cells being very clearly defined. The bed of retiform tissue upon which the blind extremities of the follicles rest (*b*) is enormously increased in thickness, and it is in this bed of tissue that the new adenoid growth is apparent, but, as is seen in the figure, there is considerable distance between the bases of the normal follicles and the new glandular growth (*c c*), the intervening spaces being crowded with a mass of small cells. There is no clear line of demarkation between the lymphoid cells of the submucous tissue and the new adenoid growth. At the upper portion of the section the submucous tissue appears crowded with the simple lymphoid cells; in the lower portion most beautiful glandular tissue can be seen, almost as perfect in its formation as the normal Lieberkuhn's follicles. The change from the lymphoid cells to the gland tissue is by imperceptible degrees. If the lymphoid cells be followed downward toward the new growth, they appear as if they slowly change their character from a simple lymphoid into an epithelial type of cell. It looks, indeed, very much as if the small lymph-cells gradually surrounded themselves with protoplasm, and thus became the nuclei of epithelial cells. Anyhow, the more nearly they approach the growth, the more epithelial is their character. Almost immediately after the epithelial type of cell can be recognized, small embryonic-looking portions of gland-tissue can be seen. These little bits often consist of four or five embryonic-looking epithelial cells arranged in a cluster. At first the acini are difficult to make out, owing to their being irregular and indistinctly marked, but they gradually merge into the perfect and regular adenoid structure seen in the wood-cut."

the rectum, takes its origin almost invariably in the connective tissue outside of the gut in the form of a soft, solid tumor consisting mainly of round cells; it is at first quite hard and immovable, but tends to grow rapidly, to become softer in consistence, to obstruct the bowel at first by outside pressure, and, later, to infiltrate neighboring parts, including the intestinal walls. This form of cancer is liable to occur in early life; it often attains a large bulk, and produces death by rapid obstruction, or by invasion of the peritonæum. It is liable to extend into the lower pelvis from the abdomen and not rarely from the ovaries.*

* A case was presented to the London Pathological Society (*Trans.*, vol. i, p. 94) of a tight stricture, about three inches above the anus, caused by a large deposit of "medullary sarcoma" external to the muscular coat of the bowel. The specimen was taken by Mr. Busk from a boy of sixteen, dead of peritonitis.

In another case presented to the same society, a man died from exhaustion, with incessant diarrhœa. He had never complained of pain, nor of constipation. It was found, on post-mortem examination, that the submucous and muscular coats of the rectum near the anus were infiltrated with primary cancer, which had caused slight narrowing of the gut, but no ulceration of the mucous membrane. There were enlarged glands the size of a walnut and a duck-egg on the psoas muscle near the aorta and beside the internal iliac artery. The specimens, referred to Messrs. Murchison and Ashton for microscopical examination, showed juice, and small, oval, globular, and fusiform cells averaging $\frac{3}{1000}$ inch in diameter, with one and sometimes two nuclei $\frac{1}{1000}$ inch in diameter, with oil and molecular matter. (*Trans.*, vol. xii, p. 910.)

There is another case, reported by Dr. Murchison, of submucous medullary deposit (vol. viii, p. 227) near the anus, causing stricture, with cancer in the liver. And still another (vol. v, p. 224), in which there were numerous nodules of medullary cancer in the uterus, vagina, and submucous connective tissue of the rectum, reported by Mr. Jonathan Hutchinson, with illustrations of the microscopical cells.

A woman of fifty-nine entered La Charité, Paris, suffering from enormous distention of the belly, with inability to have a stool. She died on the third day, comatose. Some relief had been procured by puncture of the bowel, where the distention was gaseous, by a capillary trocar. There was found cystic and encephaloid degeneration of the left ovary. A section of the solid mass where it pressed upon the rectum showed the usual appearance of encephaloid, and cancerous juice escaped when its substance was crushed. (*Bull. Soc. Anat.*, 1875, p. 104.)

Carcinoma, or true scirrhus, although often spoken of in connection with the rectum, is really so rare in this locality that I have sought in vain for an opportunity to study the histological details of a case. I have known the embryonal cells developed between the muscular fibers of the intestine in advanced epithelioma to be mistaken for carcinoma.*

You must allow me in this connection to direct your attention to a small matter which, however, by suggesting erroneous ideas as to the frequency of scirrhus, is the source of much obscurity. The adjective *scirrhous* is very often employed as equivalent to *hard*, which is its true meaning, if it has any; but it also suggests to most minds the idea of cancer. It is doubtless used to satisfy a feeling of uncertainty as to diagnosis, and involves a looseness of expression which may have been justifiable in the past, but is hardly so now. The substantive "scirrhus" is simply a synonym for the hard variety of cancer, which is at present known as "carcinoma."

Besides the varieties I have mentioned, instances of still rarer forms of malignant disease have been recorded as occurring in and around the rectum.†

It has been asserted that cancerous disease originating in the rectum is less liable to make its appear-

* Mr. Allingham mentions a case in which he removed a "scirrhous nodule," about the size of a large cherry, from the rectum over the prostate, being "obliged to dissect off, with the growth, the fibrous capsule of the prostate itself. On microscopic examination, the tumor was declared to be true scirrhus by my friend Dr. William Ord."

† Cases of melanotic sarcoma have been described by Gross, Maier, Moore, Lasègue (*Bull. Soc. Anat.*, 1875, p. 792), and Nepveu; of "ossifying cancer," by Wagstaffe (*Trans. Path. Soc. Lond.*, 1869, p. 176); of myxoma, by Cruveilhier and Hulke (but without post-mortem examination), in *Lond. Med. Times and Gaz.*, December, 1870, p. 642.

ance secondarily in other organs than primary cancer developed elsewhere. Nevertheless, the cases are not very rare in which secondary deposits have been found after death in the liver—where we should expect to find them. Quain records the case of a lad of twenty-one, who died with ascites, for which he was tapped, in whom there was nodular cancerous infiltration of the peritonæum, including the mesentery and the great and small omentum.*

In addition to the symptoms of rectal cancer already mentioned, there are some features of the disease which possess a special value in connection with its *diagnosis*. At the first interview a patient with cancer will almost always represent himself as suffering from “piles,” and will often complain of passing blood at stool, and sometimes of a protrusion occurring at the same time. Before exploring with the finger, inquiry should be made as to the character of the pain, the frequency of the calls, and the nature of the discharges; and the abdomen—especially the liver, the left iliac region, and the groins—should be examined. If cancer be present and within reach, as it almost always is, the finger will detect patches or growths presenting a granular, tuberos, or nodular feel, with more or less solidity or hardness; or, if polypoid or fungating, their surfaces may be lobulated or warty, cauliflower-like, and friable, so that fragments may be readily detached; or a “crater-like” ulcer with prominent everted edges may possibly be recognized. If a stricture be encountered, the temptation to force the finger into or through it must be resisted; for the altered tissues give way readily,

* *Diseases of the Rectum*, New York, 1855, p. 256.

and a fatal result from perforation has followed such an attempt. Verneuil relates that in an elderly woman, in hospital with obstruction, he attempted gentle dilatation of a cancerous stricture with the finger, and caused a slight laceration, which was followed very promptly by peritonitis and death.

The general impression received from the exploration, where cancer is present, differs greatly from the sensations conveyed to the finger by the contact of internal piles, which are soft, velvety, and often difficult to distinguish. Nevertheless, a hæmorrhoidal tumor sometimes becomes indurated by frequent bruising, and feels like a cancerous growth; and the sallow anæmic complexion from bleeding piles is very suggestive of the cachexia of cancer; and the elevated and indurated edges of an "irritable ulcer" of the anus have, to my knowledge, led to the expression of a more serious opinion than the real nature of the case justified. Probably the excessive pain of the irritable ulcer influenced this opinion. The tubercular, warty surface, which the rectum not unfrequently presents when affected by chronic inflammation or by the minute growths described by Broca and Richet as *polyadenomata*, must not be mistaken for malignant disease, although its persistent intractable character is very suggestive of cancer.*

* Broca, *Traité des Tumeurs*, t. ii, p. 536; Richet, *Anat. Med. Chir.*, Paris, 1860. Richet's case of multiple polypi was a young man of twenty-one, exhausted by hæmorrhages. Richet stretched the sphincter to get access to them, cut off eighty to a hundred polyps, varying from the size of a pea to that of a cherry, and burned the pedicle of each with actual cautery. Robin found the little tumors to be made up of hypertrophied rectal follicles (p. 831). Nepveu presented a specimen to the Anatomical Society of Paris (*Bull.*, 1872, p. 244) which had been regarded as a hæmorrhoid. On careful examination, he found that it consisted entirely of pavement epithelium.

If, on exploration, the finger should discover nothing, further measures should be taken to exclude "piles" from the diagnosis; but it is not advisable to insert a bougie or other exploring instrument of hard consistence, for no information could well be gained that would compensate for the uncertainty and danger that attend its use. Intelligent study of the case, with treatment addressed to symptoms, will, in time, clear up the diagnosis. When cancer of the bowel is seated beyond the reach of the finger, it happens, not rarely, that the rather sudden occurrence of complete obstruction is the first serious symptom by which its existence is announced. I can call to mind several instances in which an attack of insuperable constipation, terminating fatally, has been explained at the autopsy by the discovery of a previously unsuspected cancerous stricture. I have been surprised, also, in more than one case, to discover a well-developed mass of cancer at the lower end of the gut in a healthy-looking patient, with symptoms which I had expected to find explained by hæmorrhoids.*

In connection with the fact that the earlier ap-

* The following cases from Mr. Allingham's last edition (p. 169) are in point: An elderly gentleman was sent to him, who presented the usual appearance of "the wiry, healthy-looking Scot. 'Hard as nails,' he said he was, but he was a little troubled by irregular action of the bowels—sometimes costive, sometimes loose—and he occasionally passed a little blood. On examination, I found, what I really did not expect, a hard scirrhus mass in the rectum extending higher up the bowel than I could reach. By sheer power of constitution he lived a little more than twelve months from that interview." In another case, a gentleman of thirty-four was "suffering some pain in the back, with a weary sensation after exertion, had small losses of blood at stool, and rather frequent motions, always in the morning and sometimes at night. His idea was that he had piles. On examination, I found an epithelioma commencing just within reach of the finger, and extending, as I found by careful sounding, at least two inches higher up. The growth was causing some contraction of the bowel."

proaches of cancer are thus in some cases masked, it may be noted also that, as a rule, the disease is less painful in proportion to its remoteness from the anus.

The soft, solid, tuberculated surface of a cancerous growth, which has extended around the gut so as to produce contraction of its caliber, is not easily mistaken for the dense, cicatricial, sharp-edged ring presented by a congenital or traumatic stricture. Yet there is a remarkable case pictured by Cruveilhier* of a woman who frequented the Parisian hospitals more than ten years as a victim of cancer, and when she finally died under his charge, at the Salpêtrière, her stricture was found to be entirely benign.

In a case of a woman with suspected rectal cancer, the vagina should be first explored, for the rectum is not unfrequently affected secondarily to the uterus. The author just mentioned has a case in which the os uteri, presenting through a recto-vaginal opening into the rectum, was actually mistaken for a cancerous tumor growing from its wall.

Stricture from syphilitic gummy infiltration of the coats of the rectum, which has a distinctly soft, solid, doughy feel, would be most likely, of the benign strictures, to have its real character mistaken; but careful scrutiny of the patient's previous history and actual condition would probably settle the question.†

The duration of the diseases liable to be mistaken for one another is a valuable element in diagnosis. That of cancer of the rectum varies from six months

* *Atlas of Pathology*, livraison xxxiii, pl. 1.

† Bardeleben makes the remark that syphilitic gumma is most frequently mistaken for cancer of the rectum.

to two years and a half, with exceptions, as to longer duration, in favor of certain forms of epithelioma.*

A lady died recently under my observation in the fifth year of an epithelial cancer just within the sphincter. In this case there was great distress from obstruction, due to a general contraction of the walls of the bowel. The disease commenced on one side and extended completely around the gut, and then advanced upward. As the contraction increased, little nodules of cancerous material seemed to grow out from the walls of the bowel, some of which became pedunculated, and were subsequently detached to make room for the passage of fæces. When the obstructive symptoms had reached a point which seemed almost insurmountable, ulceration took place into the vagina, and great relief was experienced by their free escape through this route. This feature of the disease, which is not uncommon in women, seemed to me to prolong life.

Cancerous stricture, although not free from a liability to abscess and fistula, is more rarely complicated in this way than the benign variety. The grave cases of multiple fistulæ associated with stricture are

* Walshe makes the mean duration of cancer of all varieties 27.14 months (*ut supra*, p. 127). There are also rare examples of more rapid progress: A hospital case is reported in the *Bull. de la Soc. Anat.*, 1876, p. 686, by an interne of M. Cusco, of a sewing-girl of twenty-five, who had noticed some difficulty in defecation three months before admission, and had taken a dose of medicine and had passed two or three bloody stools. On admission she was suffering from distention of the belly, and died in a week. This patient had no pain in the rectum, although the finger recognized a stricture less than an inch from the anus, then a little dilatation, and then a second stricture described as hard, nodular, and painful to the touch. There was no ulceration. Beyond this the rectum was largely dilated. Histological study showed "cylindroma with colloid degeneration." The liver was "stuffed" with cancerous tubera. This woman died within three months after her first serious symptom.

almost always benign. But, when the complication of abscess and fistula does coexist with cancer, it is more likely to result in a communication with the vagina or bladder. Ulceration into the vagina seems to be a conservative effort, and often affords decided temporary relief to previous obstruction, as in the case I have just related; but abnormal communication with the bladder causes great aggravation of suffering in both sexes, especially in men, by provoking excessive irritability and painful cystitis.

The *pain* which attends cancer of the rectum is usually very constant and characteristic; at first, merely an unpleasant sensation, as though there were something yet in the bowel to be voided, it becomes afterward wearing and intolerable rather than acute and severe, often involving the sacrum and hips, and extending down to the thighs. When the cancerous growth is large, there is also sharp, lancinating pain from stretching of nervous filaments; and, where ulceration exists, it is gnawing in character. And yet the disease has been known to reach an advanced stage without its existence even having been suspected. Brodie tells of a very old lady whom he was requested to examine because her servant insisted that she passed her stools from the vagina instead of the rectum, although she could not be induced to believe that there was anything wrong, as she suffered no pain nor inconvenience. He found the rectum entirely blocked up by a cancerous growth, with extensive ulceration of its anterior wall into the vagina.*

The description I have given you of cancer of the rectum would be incomplete if I did not draw your

* *Op. cit.*, p. 238.

attention to the fact that there are exceptional cases in which the disease does not obstruct the function of the bowel, the evacuations continuing unimpeded to the end of life. These exceptions to the rule are rare, and they are explained by the early occurrence of ulceration, by which the caliber of the bowel is kept open, or by the fact that the disease involves only a portion of its circumference. At the same time it is to be recognized that the obstinacy of the constipation in this disease is not always in proportion to the narrowness of the passage, nor does it seem to be entirely due to the mechanical obstruction which so generally is present. As in the case of Broussais, to which I have already referred, there may be room enough for the *fæces* to pass, and yet they are obstinately retained. There seems to be defective contractile effort in the muscular walls of the intestine above the seat of disease, due possibly, in some degree, to over-distention, but not entirely, for free spontaneous evacuation almost always follows when the obstruction is removed, as by an artificial opening of the bowel.

I have omitted noticing the peculiar odor of the discharge furnished from the surface of a cancerous ulcer of the rectum, which, like that from a vaginal or uterine ulcer of the same nature, is *sui generis*, and readily recognized by the experienced clinical observer as characteristic.

The *progress* of a case of cancer of the rectum may be attended by other distressing symptoms which you will be called upon to palliate, such as irritability of the bladder, either sympathetic or from direct extension of the disease; œdema of the lower limbs,

especially of the left, from pressure of a distended colon upon the iliac veins; cramps of the limbs, or darting nerve-pains. A very characteristic symptom is a bloody discharge from the anus, often slight, occurring not only at stool but in the intervals, so as to soil the linen. It is not pure blood, as from a hæmorrhoid, but of a sanious, greasy, mixed-up character, brick-red and paint-like, and peculiarly fetid. The discharge from an ulcerated benign stricture is more purulent. As the disease advances, there is, usually, utter inappetence, resulting from the constant wearing pain in the rectum and the anodynes taken for its relief, the gastric distress and colicky uneasiness being aggravated by taking food. This direct source of exhaustion, together with loss of rest from the unceasing desire for relief at stool and the inability to secure it, added to the steadily failing strength from advancing cachexia, gradually brings about the most usual termination of the disease—death by exhaustion; or, the end may come sooner and more suddenly by obstruction, perhaps accidental, or by peritonitis—from fæcal accumulation, sometimes from ulceration and perforation, more rarely from rupture.

As to the *prognosis* of cancer of the rectum, its only hopeful features are to be found in establishing a diagnosis of epithelioma—as when a fragment of an outgrowth can be secured for microscopical examination, so as to exclude the more malignant varieties of cancer, for the progress of epithelioma is certainly less rapid; and in the possibility that the growth may possess but little of the cancerous element, retaining the quality of simple adenoma, with which it is so nearly allied. This, I have reason to

believe, is possible, from the cases reported by Mr. Arnott and others.

In these phases of the disease it may continue localized; or, if removed early and freely, it may never return. Billroth saw a case operated on by Schuch four years before, and the patient was in good health.*

On the other hand, the disease may pursue a rapidly fatal course, as in the rarer instances in which it is developed in early life. Dr. Cummings, of Leicester, Mass., reports the case of a boy of twelve who was seized with symptoms of dysentery (?), and died in five weeks with intestinal obstruction. The cause of this was recognized before death in a tumor in the rectum, about two inches and a half from the anus. On post-mortem examination, the morbid growth was found to surround the whole circumference of the rectum, and at points it was ulcerated. When cut, "the surface showed pearly granulations, and was found to be colloid"—which, as I have already said, is probably a variety of the cylindrical-celled epithelioma due to cell degeneration.† In the still rarer cases of malignant sarcoma, or soft cancer, the prognosis is notoriously hopeless.

Neither our histological knowledge nor our experience is as yet sufficient to controvert the opinions, recorded by prominent Continental surgeons, that the disease has been sometimes permanently cured.

Although stricture and obstruction constitute the rule in rectal cancer, these features may be entirely

* Esmarch, *ut supra*.

† This specimen was exhibited to the Boston Society for Medical Improvement. (*Am. Jour. Med. Sci.*, April, 1854, p. 352.)

absent, and there are cases in which a mild diarrhoea is present from the first.*

We come next to the consideration of the means by which we may palliate the symptoms of this pitiless disease, and possibly avert its fatal tendency. The statistics collected by Walshe would seem to justify his inference that cancer is favored by crowded cities and by civilization; and, more recently, Cripps has found that the mortality from the disease varies widely in the different districts of England. I can bear witness to its frequent occurrence in otherwise healthy elderly people who have always lived in the country.

In any case, it would be well to secure for a patient the more vitalizing influence of country air, and a simple, natural mode of life. Plain and well-selected food, nutritious in quality, and easily digestible, is of the utmost importance. Study to avoid whatever occasions flatulence, or seems to disagree. I have always been partial to a milk diet as far as

* Dr. Packard, of Philadelphia, reports a well-observed case (in the *Transactions of the Pathological Society of Philadelphia*), in which the rectum and bladder were consolidated together by a large cancerous mass, but there was no stricture of the rectum, and there had been no evidences of obstruction during life; but, on the contrary, a constant diarrhoea with emaciation, with fatty degeneration of liver and kidneys.

The late Dr. Mason Warren (*Surgical Observations*, etc., Boston, 1867, p. 243) gives the following case: A gentleman of fifty-six applied, with retention of urine. On examining the rectum for enlarged prostate, the finger encountered a cancerous mass, by which the passage was blocked, all but a narrow pathway. He had always diarrhoea, and, although suffering occasionally from attacks of pain in the bowels and indigestion, had never any serious symptoms in the rectum. His retention was satisfactorily relieved from time to time, but he died within the year with general anasarca and exhaustion. On post-mortem examination, the last four inches of the rectum were occupied by a cancerous growth, which extended to the prostate, and thence projected into the bladder, occupying about one third of its cavity. There was acute left pyelo-nephritis.

practicable in these cases ; all that can be said against it is that it rather favors constipation. Seed fruits and vegetables containing much woody fiber are to be especially rejected. Well-made soup, bread, eggs, tender and juicy beef and mutton, sweetbreads, plainly cooked game, farina, custard, green peas, potatoes, cream, and butter, constitute well-selected fare ; in short, that form of food should be sought which contains the greatest amount of nutritive material with the least fecal residue. As for stimulants, no rule can be given ; you must observe carefully in each case if they agree, and advise accordingly. On the whole, I should be suspicious of harm from their use, save with great moderation. There is no objection to the moderate use of tea, coffee, or cocoa. Whey, in its different forms, is an excellent drink. Koumyss, or fermented milk, is easily digested, if its use is begun with caution, is highly nutritious, and not so constipating as milk in other forms. I have found it an excellent article of diet.

Next, as to the means of securing regular and satisfactory action of the bowels with as little pain as possible, which, to a person suffering with cancer of the rectum, is usually the great business of life. The articles of diet commonly recommended for this purpose—fruits, cracked wheat, grits, mush, oatmeal-porridge, bran bread, and bean-flour biscuits—too often occasion distress and flatulence. I have seen more comfort derived from the judicious use of laxatives. Of these the gentler alkaline salines in combination with sulphur and aromatics, and, perhaps, with senna or jalap in small quantity, have rendered the most reliable service in my experience. The last-

mentioned drug has seemed to me to liquefy the contents of the large bowel with less irritating effect than any other of the powerful vegetable cathartics. It is certainly hydragogue, but in small doses unirritating, and well borne for a long time. This remark applies to its use in small quantities as an addition to other laxatives. Castor oil is always reliable. Aloes is apt to irritate the rectum, and is therefore inadmissible. The laxative mineral waters generally oppress the stomach; they should be taken warm. But, of all means of securing action of the bowels, the use of warm unirritating injections of milk and water, or flaxseed, catnip, or hop tea, to provoke discharge by gentle distention of the bowel rather than by stimulation, is the most satisfactory—either alone or to assist the action of laxative medicine. The tube of the injecting apparatus should be perfectly smooth, and longer than that usually employed, so that it may be insinuated, if possible, beyond the diseased portion of the bowel. The tube used for vaginal injections is often preferable for the bowel; or, where the stricture is considerable, a flexible urethral catheter—perhaps with a stylet of leaden wire to fill up its eyes. The patient should be taught to have his evacuation in the recumbent position, which greatly lessens the pain and also the tendency to strain, by which the tender parts are bruised, and the greater uneasiness that follows the act always aggravated. A bed-pan and an India-rubber cloth, and the use of a solution of permanganate of potass to prevent odor, and a little effort at first, to overcome the natural disinclination to this mode of getting relief, will amply repay the trouble. The recumbent position with

the hips slightly raised will at all times, when the patient can bear it, very much lessen pain and diminish the frequency of the calls. The tendency to excoriation at the anus, from contact with the acrid matters passed, is also mitigated in this way; and the addition of an ounce of warm lard oil or melted vaseline at the end of an enema, by substituting a small cup of the lubricating material for the vessel containing the ordinary tepid injection before withdrawing the tube, will give great comfort by protecting ulcerated surfaces from faecal contact. The liberal use of vaseline externally is of service. In all manipulations of the diseased parts, whether for this purpose or for exploration with a view to diagnosis, the greatest gentleness must be observed, or you will do your patient more harm than good. Hæmorrhage may follow, and increase of irritation pretty surely will. There is a good deal of the *noli me tangere* about the disease; the less it is handled, the better.

The employment of bougies for dilatation, in stricture caused by cancer, is a measure which has no curative value; it is rarely advisable, except in extreme faecal accumulation, to facilitate the passage of tubes for injection, and then they must be used with the utmost caution. Dr. Quain, who begins his remarks on *treatment* with "what to avoid," names first, bougies and escharotics. The careful introduction of a bougie by the surgeon may secure an easier evacuation; but patients should not pass instruments for themselves, in consequence of the danger of perforation. Cripps mentions a case where the disease was near the anus and the bowel greatly narrowed, in which he "taught the daughter (who tenderly

nursed her mother) to pass the finger through the stricture night and morning. This effectually prevented further contraction."

There are cases in which the removal of fungous growths when they block up the passage gives great temporary relief—as in Broussais's case, where Amusat tied them off by ligature, and the cases in which Allingham stretched the sphincter and enucleated cancerous masses by the fingers, by which much benefit was gained for the time. Dr. Dan King, of Rhode Island, reports a case of prolonged obstruction, in which he twice bored through a cancerous mass in the rectum and secured relief to the bowels.* Volkmann's recommendation of the "sharp spoon" may be followed with advantage under similar circumstances; and the practice of "scooping" and tearing away a fungous growth (*raclage*) to relieve stoppage, although seemingly a desperate attempt at palliation, has done so much good for the time, and has been attended with so little danger from hæmorrhage, as to deserve consideration where colotomy may not be feasible. It would be proper to have the liquor ferri subsulphatis or the actual cautery at hand to restrain bleeding; and this is less likely to be free in proportion as the morbid growth has been scraped away down to its solid base or, if possible, entirely enucleated.†

* *Boston Med. and Surg. Jour.*, August 20, 1830.

† Mr. Allingham's experience on this subject is of great interest, and the benefit which followed in his cases remarkable.

"In encephaloma of the rectum great temporary advantage and much relief from pain may be obtained by tearing out the growth by the fingers or a scoop (as the late Prof. Simon advocated in cancer of the uterus). I prefer my fingers. You must be bold in doing this, and enucleate the whole growth quickly and resolutely. If you tear away only superficial portions, hæmorrhage

Complete vertical section of the lower end of the bowel, including the sphincters, has been practiced in several cases of rectal cancer by Verneuil, with good success, as a substitute for colotomy. He employed the *écraseur*, and made his section in the

may occur to a considerable extent, which must exhaust your patient, and no real benefit will accrue.

"I had a case under treatment in conjunction with Mr. Pinching, of Gravesend, in the person of a member of our own profession. An immense encephaloid growth almost filled up his pelvis, and he came to London to see if I could do anything for him. He was in such a condition that I thought he could not bear colotomy; but I saw that, if I could remove the growth in great part, without his losing blood to any extent, great relief must follow. Accordingly, assisted by Mr. Pinching, I made a free division of the anus, the muscles and fat around which had been so thinned away by the pressure of the growth that it was only like cutting through thin devitalized skin. Only one small vessel appeared inclined to bleed, and this I immediately twisted. I now passed my hand gently into the pelvis, got my fingers well above the growth, and tore it out. A large mass was at once removed. I then continued to remove all I could find, and it came away exactly like brain to the extent of filling a good-sized pudding-basin. I had come fully prepared with subsulphate of iron, the actual cautery, sponges, and wool, to have at once plugged, had hæmorrhage taken place; but, to my astonishment, there was no bleeding worth mentioning, and the cavity from which the cancer had been removed was dry and gray in color, with red spots. As a precaution against secondary hæmorrhage, I put in sponges powdered with subsulphate of iron; but there was no bleeding at all. From the day after the operation the patient rallied, lost his night-sweats, ate and drank all we gave him, and was able to return home in a few weeks. After this he lived in comparative comfort for two months, then, as the growth returned, he very gradually died from exhaustion, nearly five months having elapsed since he underwent my treatment. Twice since this I have carried out this plan in a similar manner, and in both cases great, though temporary, relief followed. I was surprised to observe in the three cases, after the removal of the cancerous growths, that the facial appearance of the patients so immensely improved; in fact, they lost all the malignant aspect, and not until the growth gradually returning, and with it the poisoning of their blood and tissues, did the countenance reassume its worn, haggard look. So also in respect of strength, freedom from pain, appetite, and capacity for sleep, the change for the better was remarkable. In this variety of cancer, though colotomy would afford in some degree relief from pain, the abundant cancer elements being still present, poisoning of the general system would continue in full force, and thus extension of the term of life is not obtained, and, indeed, can hardly be anticipated, and in such cases where I have performed colotomy I have found the patients have gradually succumbed." (Third edition, London, 1879.)

median line behind, toward the coccyx. It is claimed for this operation that it is free from serious danger, and that, besides removing threatened obstruction, it relieves pain, slow septicæmia, tenesmus, and bloating.*

Colotomy, as a palliative in cancer of the rectum, has become so well established, in consequence of the good results which have followed its use within the past ten years, that it is hardly necessary to cite additional cases in proof of its value. It is especially indicated—first, where the act of defecation is habitually accompanied by severe pain; and, second, where obstruction is threatened by narrowing of the rectum by a cancerous growth. In the exceptional instances in which there is a free and painless passage, or an habitual diarrhœa, and where there is no ulceration, colotomy is not indicated. Pain caused by the pressure of a cancerous rectal tumor upon the sacral nerves, which is not rare, is not to be relieved by this operation; but where an ulcerated surface in the bowel is being constantly bruised against the fecal mass in straining at stool, which, on account of the urgent tenesmus, it is so hard for the patient to resist, or where no efforts on the patient's part can secure an evacuation, or where a communication has formed between the rectum and the bladder, or the vagina, so that the sufferer has to bear the additional tortures of cystitis, then an opening into the colon, either in

* Verneuil reports (*Bull. de la Soc. Chir.*, 1872, p. 469 *et seq.*) three cases in which he tried this resource—in two, with great and prompt relief to the urgent symptoms of "stercoral stagnation"; in the third of these cases death from peritonitis resulted. He attributes the relief that follows this operation as much to the complete section of the sphincter, by which its spasmodic and painful contractility was abolished, as to the division of the stricture.

the lumbar region or in the left groin, will be pretty certainly followed by decided relief. To secure this as promptly as possible, it may be necessary after the operation at first to wash out the cavity of the bowel below the artificial opening by tepid enemata.*

In colotomy the left loin has been heretofore generally preferred for the artificial opening, but I am disposed by recent experience to think well of the left groin, especially in males. Formerly, exaggerated fears were entertained as to the danger of the lumbar operation, but these have been dispelled by accumulating experience—its mortality in twenty-seven operations done by Mr. Allingham showing only eleven per cent. It was preferred at first to the operation in the groin because the peritonæum would be avoided; but it is now clearly recognized that the dangers of the peritonæal section required in the latter proceeding have been also greatly exaggerated; and there are certain positive advantages in having the

* The following evidence in favor of colotomy will be valued by all who knew the excellent surgeon who has left it on record, the late G. W. Callender, F. R. S. (it is taken from *Trans. Clinical Soc.*, London, vol. iii, p. 36): A tailor of thirty-four, with partial obstruction of the bowels, passed more or less blood, and had constant pain in the rectum, worse before and during defecation, but especially wearing at night. A mass was felt two inches above the anus, surrounding the intestine, and projecting into its caliber so as to obstruct it. For complete stoppage, colotomy was done shortly afterward, with immediate relief at the time, and removal of all pain and misery about the rectum, not only for the moment, but for some months afterward.

The discomfort to the patient from the artificial anus is practically none. The bowel discharges at intervals, and it can be readily dealt with. "Indeed," says Mr. Callender, "did any discomfort exist, it would be more than counterbalanced by the fact that his life was saved by the operation, and that he was entirely relieved from all pain and local distress." He speaks of twelve cases in which colotomy was done for cancer of the rectum, and adds that, "although three died within twenty-one days after the operation, there was not one case in which death was due to the operation, which, it seems to me, is a surgical proceeding apparently free from great risk to life."

new anus in the groin which should be fairly considered. These were recognized, as long ago as 1850, by Mr. James Luke, who selected this locality, notwithstanding the great danger then attributed to peritonæal wounds, in a man of sixty, dying of cancerous obstruction; his patient being much relieved, and surviving for eight months.* He was followed, in 1851, by Mr. John Adams, in a similar case, in a woman of thirty-nine, in whom the inguinal opening served a good purpose for a year.† Mr. Luke repeated this operation afterward, at the London Hospital, on a patient in the fifteenth day of obstruction from cancer, who died within forty-eight hours. Post-mortem examination showed a rupture, six inches in extent, in the peritonæal coat of the transverse colon. This case illustrates, incidentally, the danger attending delay. Volkmann expresses a preference for colotomy in the left groin when the disease extends too high up the rectum to be reached by an operation from below. The advantages of the left groin as the site of an artificial anus in cancer of the rectum are as follows: in the first place, the operation is more easily performed; it gives us the additional power of exploring by the finger before opening the colon, and of detecting possible bands or adhesions; in a word, of getting nearer to the actual seat of the disease, and possibly of acquiring a greater certainty as to its nature. More of the colon is preserved for its proper function by an inguinal opening, and it enables the patient to lie on his back without discomfort, and also to care for himself in defecation, by which his condition is rendered far more tolerable.

* *Med. Chirurg. Trans.*, vol. xxxiv, p. 263.

† *Ib.*, vol. xxxv, p. 57.

Are there any remedies which possess a curative value in this disease? Arsenic and conium have had their advocates, but, like some other less respectable drugs which have enjoyed a temporary reputation, they are no longer employed. Prof. John Clay, obstetric surgeon to Queen's College, Birmingham, England, has lately published a paper, with several well-observed cases, showing the curative power of Chian turpentine in cancer of the female genitals.* He asserts that in five-grain doses, three to five times a day, this drug relieves pain and causes the tumor to shrink. At the present time I find it very difficult to procure this article of assured quality. My friend Dr. Leaming, of this city, has some evidence of the beneficial effects of the tincture or fluid extract of the *Thuja occidentalis*, or *arbor vitæ*. This terebinthinate has a popular reputation as a local cure for warts. It is harmless and inoffensive to the stomach. I have frequently prescribed it, mainly as a placebo, but have no positive evidence to offer. Dr. Quain found gallic acid lessen bleeding.

For the relief of pain conium is the best of the ordinary narcotic extracts, but there is nothing equal to opium in some of its forms; all of the other anodynes soon lose their effect, and we are forced to rely mainly upon this; but its use should be deferred as much as possible, and judiciously managed, for it is liable to retard digestion, to provoke flatulence, to increase the difficulty in getting the bowels to act, and, in its secondary effects, it increases the sensibility to pain. Practically it does the greatest service when applied locally—rubbed up with warm

* *Lancet*, March 27, 1880, p. 477.

starch mucilage, or melted vaseline, and carefully thrown up into the bowel, after a stool, by means of a soft catheter and small syringe. Opium agrees with some patients better than others, and this circumstance will influence you in recommending its use. Chloroform and its compounds tend to disorganize the blood, and can not be habitually used with advantage.

Can surgery do any more than medicine in cancer of the rectum, beyond simple palliation? It has been asserted lately, and on apparently good authority, that early and complete extirpation has been followed, in some instances, by permanent cure.*

* Volkmann ("Ueber den Mastdarmkrebs und die Exstirpation recti," in *Klinischer Vorträge*, No. 131 [*Chirurgie*, No. 42], March 13, 1878) has seen three permanent cures by early removal of undoubted cancers of the rectum; and has also seen the disease delayed for a length of time—six, five, three years. He mentions the case of a woman who died eight years after an operation, without any local return of the disease, probably of cancer of the liver; and of another case of total extirpation eleven years before, in which there had been two relapses requiring operation, the disease having reappeared at the seat of the new anus, and who was at the time of writing (1878) strong and active. Alex. von Winiwarter (*Beiträge zur Statistik der Carcinome*, Stuttgart, 1872—with preface by Billroth) gives twenty-three cases of rectal cancer: of these, ten were considered unfit for operation; five died of the operation; in four, there was prompt return of the disease; in two, the ultimate result was unknown; and two were permanently cured.

One of the latest and best authorities on the histology of rectal cancer, Cripps (at a meeting of the Royal Medical and Surgical Society, of which the proceedings are reported in the *Lancet*, June 28, 1879), says that the specimens he had examined at that time of reputed cancer (and he states elsewhere that he had examined one thousand sections made from sixty specimens) "had not all proved to be examples of cancer, so called," meaning that some of them were what this writer calls "simple adenoid disease. . . . This disease," he adds, "begins as an adenoid growth in the submucous tissue, proceeding to ulceration and cicatrization, so that the floor of the ulcer becomes dense and scirrhus-like." In a case of his own he had removed a recurrence four months after the primary operation, and since then (about two years) the patient had remained quite well; her condition was better than if colotomy had been performed. Another patient, operated on by Sir James Paget three years ago, was now in good health and attending to business.

Although, as I have already shown, benign adenoma may be mistaken for true cancer, and such a case, if subjected to extirpation, may have gained unmerited credit for the operation, yet it would certainly be good surgery to give a patient the benefit of a doubtful diagnosis, and endeavor to effect a cure by prompt and thorough removal. This course would be more surely a proper one, since adenoma liable to be taken for cancer would also call for removal, and the operation of extirpation has been demonstrated by recent experience to be a fairly safe proceeding; and, in view of the uncertainty as to the point at which "adenoid disease" may merge into fully developed cancer, it is, in my judgment, in well-selected cases, eminently justifiable. In nine cases, for which I have been more or less directly responsible, the operation has been recovered from in all. In these cases, several of which were not selected with the rigorous care which, with fuller experience, I should now consider obligatory, two of the patients are still in good health, after an interval of twenty months in one, and over two years in the other; and in more than one of the remaining cases a prolonged respite was gained.*

* In the tables appended to the Jacksonian prize essay (Cripps, 1876), out of a total of fifty-three cases of excision of the rectum for cancer, forty-four recovered, and nine died—a mortality of about seventeen per cent.

In his more recent work on cancer of the rectum (London, 1880), Mr. Cripps adds: "In my own experience of thirteen cases, eleven recovered and two died (p. 166). In the forty-four cases of recovery above mentioned, the subsequent history is not stated in sixteen. From the remaining twenty-eight, three were deducted because there was doubt as to the nature of the disease." Of the remaining twenty-five cases, no recurrence has taken place in eleven instances after intervals varying from a few months to some years. In three of the cases, over four years had elapsed without recurrence. In the remaining fourteen cases, recurrence took place after intervals varying from four months to three years.

This is in accordance with the average results shown by the recently recorded experience in England and on the Continent.

Even when the disease is undoubtedly cancerous in character, I should advise you to favor its extirpation if seen sufficiently early, and ascertained to be entirely removable. But, to be successful, the removal must be complete and thorough. All the best recent observers concur in the opinion that only a small percentage of cases of cancer of the rectum, as they present themselves in practice, are properly to be treated by extirpation. It is only when the finger can be carried well above the portion of the gut involved in disease, and where the walls of the rectum beyond the altered parts can be distinctly felt to be soft and movable and free from external attachment, that it is proper to operate. When the extra-rectal connective tissue in the concavity of the sacrum can be recognized as solidified in any degree, or when enlarged glands, in the form of hard nodules, can be distinguished in this region, the lymphatic

In some of these the recurrence was of a very trivial nature, and was easily removed by a second operation, while in others the patients died of general cancerous cachexia.

"My own experience," says Mr. Cripps, "gives very similar results. In eleven cases that survived this operation, the disease returned in four. In two others, the disease returned as a small localized nodule (indeed, I doubt whether it had ever been removed at this spot); in both these cases, a slight second operation completely relieved the patients, who have remained well since. In the remaining cases, the disease has not returned, one operation being three years ago.

"There can be no doubt whatever that, if the patient survives the operation, his life will be considerably prolonged, for it is the pain and distress of the local disease that so hasten the death of the patient; and, further, however few the cases may be, it is always possible to give a prognosis that years may elapse before the return of the disease, or, possibly, that the case may result in a permanent cure."

trunks in the meso-rectum, which communicate directly with the peritonæal network, are certainly involved, and the disease can not be completely extirpated. The same is true when the rectum has contracted close adhesions anteriorly with the prostate, or, in the female, with the vagina. The most promising cases, in my experience, are those which begin as pedunculated or polypoid tumors, for they advance more slowly, and the submucous tissue is less likely to be invaded by the new growth.*

In 1865, Mr. Curling, while bearing testimony in favor of colotomy, which was then slowly rising in estimation as a palliative in cancer of the rectum,† remarks that "excision of cancer of the rectum has never obtained a place as an established operation in surgery." The reason for this opinion is sufficiently obvious: it was at that time justly regarded as a difficult and dangerous operation, and consequently as a desperate and uncertain resource. Histology had not then shown the intimate nature of rectal cancer, how slender the differences between it and the most ordinary and benign affections of this region, and how its early extirpation might avert fatal developments. The operation had been first done in France in the last century.‡ It had been revived, as a remedy for rectal cancer, by a French surgeon in this century, Lisfranc, § and principally practiced by a German sur-

* "Exstirpatio Recti (Volkman), for Cancer, with Cases," by W. H. Van Buren, M. D., etc., New York *Med. Rec.*, July, 1878.

† "On the Treatment of Painful Cancer of the Rectum," *Lancet*, Jan. 7, 1865.

‡ By Faget, of Paris, in 1739, upon a patient, the lower end of whose rectum had been isolated by extensive sloughing abscesses, leaving a cavity which could not be made to heal. After amputating some two inches of the bowel, cicatrization was slowly accomplished. (*Mém. de l'Acad. royale de Méd., ut supra.*)

§ *Mém. de l'Acad. royale de Méd.*, 1830.

geon, Dieffenbach; and the exaggerated pretensions advanced in its favor were not of a character to inspire confidence. Yet it had been done successfully in London by Herbert Mayo as early as 1833, and he speaks favorably of its ultimate result.* Bushe and Valentine Mott also did this operation in New York with temporary success before the discovery of anæsthesia. The apprehension of danger from hæmorrhage was lessened by the subsequent introduction of the *écraseur* by Chassaignac, who claims to have first employed the instruments in this operation in 1854. It has since been safely done in this country with more or less advantage by Marsh, of Albany; Emmet; Agnew and Levis,† of Philadelphia; Keyes, Briddon, G. A. Peters, and L. A. Stimson, of New York; and others. But the Germans, especially Volkmann, of Halle, deserve the credit of greatly diminishing the danger from septic cellulitis and peritonitis by the thorough practical application of the antiseptic method of Lister, and the more thorough and systematic use of drainage. Finally, Cripps's prize essay, in 1876, by demonstrating the increased safety and feasibility of the operation, has led to its renewed trial in

* *Observations on Injuries and Diseases of the Rectum*, London, 1833, p. 213. Mayo removed the whole of the lower end of the rectum, including the external sphincter, for cancer, by Lisfranc's method. His patient recovered from the operation, and improved greatly in condition. "She became a fat, cheerful, and comely person. . . . The cicatrized surface did not contract"; there was neither stricture nor incontinence; but she did get what he did not anticipate—a "prolapsed" of some length, which he could not obviate. Mayo adds: "This solitary case has left me with the impression that in instances of carcinoma of the rectum, in which the disease is confined to the extremity of the bowel, and is attended by great and unmitigable suffering, the operation should be performed." He adds a case in which he regrets he did not do the operation earlier.

† See an excellent paper by J. D. Roberts, of Philadelphia, on "Excision of the Rectum," in the *Med. and Surg. Reporter*, June 9, 1877.

England. Thus, within fifteen years, the operation of excision, or extirpation, may be said to have become an established resource in cancer of the rectum, to be judiciously applied in properly selected cases.*

I will conclude by mentioning some of the details of the operation and its immediate consequences which recent experience seems to have settled. First, that the complete removal of the sphincters, with three, four, or even five inches of the lower end of the bowel, is not necessarily followed by very troublesome incontinence. The parts contract and adapt themselves, after a time, to the function of the bowel with a completeness that leaves little to desire. In a patient from whom three inches and a half of the rectum, including the sphincters, were removed more than two years ago, the appearance of the anal orifice when brought in view by separating the nates is not strikingly different from the natural opening. It is oval in shape, half an inch by three quarters in size, without converging wrinkles; the integument is continuous with healthy mucous membrane by a smooth, even, linear cicatrix; and the orifice is closed by a little mass of the internal coat of the bowel as large as the end of a finger, which is just visible. The bowels move without pain or inconvenience, usually in the morning; there is no prolapse. After wash-

* There may possibly be cases in which it is proper to remove the whole posterior wall of the vagina, as Volkmann says he did in one instance, together with a diseased rectum; or to remove four inches of the rectum, with the prostate and neck of the bladder, as Nussbaum (*Herausnahme des Mastdarmes*, etc., in *Bayr. ärztl. Intelligenzblatt*, November, 1868) is reported to have done from an individual who was living three years after; but I have not yet encountered them.

ing, a little wad of prepared oakum is placed upon the orifice, and over this a napkin.

It has been proved to be unnecessary to attach the stump of the rectum after excision to the lower edges of the wound by stitches, which was first done by Velpeau in 1839. It has been found that these parts approximate as the gap fills by granulation, and the contraction accompanying cicatrization assists satisfactorily in preventing incontinence. In one case in which stitches were used, but mostly tore out, it was necessary after healing to employ gentle dilatation, at one time, to obviate a slight tendency to contraction in the new anus.

Immediately after the operation, the less dressing applied to the part, the better. Wherever it has been thought necessary to plug the wound for hæmorrhage, much additional distress has followed, as exemplified in Dr. Emmet's case.* If plugging were absolutely required for this purpose—a contingency which is not likely to happen—I should prefer Guyon's caoutchouc substitute for the *canule à chemise* sometimes required after lithotomy, or a glass tube such as Emmet employs for the vagina. On the whole, the after-treatment recommended by Mr. Cripps in his latest work seems to me worthy of imitation: to place the patient on the back so that the parts, without any dressing whatever, are in a depending position, so as to favor drainage, and to syringe the cavity of the wound thoroughly four or five times in the twenty-four hours with a weak, tepid solution of carbolic acid. Further experience must determine if this plan, which has the great merit of simplicity, will not yield as

* *Principles and Practice of Gynecology*, Philadelphia, 1880, p. 515.

good results as the more elaborate details made use of by Volkmann. As to *thymol*, it has been fairly tried under my observation and found unreliable as an antiseptic—certainly inferior to carbolic acid.

LECTURE XII.

CONGENITAL MALFORMATION—FÆCAL IMPACTION—FOREIGN BODIES IN THE LOWER BOWEL—ATONY OF THE RECTUM—DIAGNOSIS—EXPLORATION—NEURALGIA—HYGIENE OF THE LOWER BOWEL.

THERE are several subjects of interest yet to be studied. One of the most important of these is *congenital malformation*, or *imperforation*, by which the function of the lower bowel is rendered impossible without the aid of surgery. Cases of this kind may happen to any medical man who takes charge of women in childbirth, and, where the aid of a surgical expert is not within reach, a human life may depend upon the promptness and capacity for intelligent action of the accoucheur. The fact of their rarity is no justification for inability to meet the requirements of these cases of imperforation.* They have largely occupied the attention of able surgeons, and the literature of the subject is very extensive.

It is an excellent rule to carefully examine every newly born infant, if the meconium is not freely void-

* In a grand total of 73,000 births, collected by Couture of Havre, Collins of Dublin, Zohre of Vienna, and Trélat at the Maternité of Paris, according to the report of Le Teinturier (*Bull. de la Soc. Anat.*, 1871, p. 305), there were but seven cases of imperforation, or one case in about 10,000. This showing can hardly be accurate. Cases of imperforate rectum, in which the anus is perfect, and which require exploration for their detection, must often escape without recognition.

ed within the first twenty-four hours. If there is a defect in development, it will present itself, in the great majority of cases, in one of the following forms :

1. The anus, the natural position of which is readily recognized, is "skinned over," or closed, by a thin layer of integument or semi-mucous membrane.

2. There is a depression, or dimple, where the anal orifice should be, but no opening.

3. There is no indication whatever of the presence of an anus, the raphé extending in an unbroken line from the scrotum, where it is usually well marked, to the tip of the coccyx ; or,

4. There is a perfectly well-formed anus, but, if a female catheter or, still better, the little finger be liberally greased and inserted, it encounters a transverse septum, or bulkhead, about an inch or less from the orifice, by which the gut is sealed—thus forming an anal cul-de-sac.

The external sphincter, in imperforation, is either perfect, more or less defective, or entirely absent. The rectum may approach the imperforate anus, the thickness of a delicate membrane only intervening, it may terminate at any distance above the anus or the summit of an anal cul-de-sac, or it may be wanting entirely—as in a case recently reported by Tillaux. In the latter event there are usually other evidences of arrest of development : as lack of size in the pelvis, indicated by too great proximity of the ischial tuberosities, or, possibly, spina bifida. The rectum sometimes ends in a blind pouch, or narrows down and becomes attached to the bladder at its base, or to the vagina, in which event there may be a communication

with the cavity of these organs, and some escape of meconium through them.*

There are cases of congenital narrowness of the anus, but the orifice usually adapts itself to its functions under the dilating influence of solid stools. If this difficulty should persist, forcible stretching or incision are the remedies.

An infant with complete imperforation is necessarily doomed to early death. This takes place sooner or later, according to its physical powers, generally within ten days, and its immediate cause is peritonitis from over-distention, aided by septicæmic poisoning by the retained excretions. If there is any escape of the contents of the rectum through the urethra or vagina, death may be delayed.

The following abstracts of cases will serve to illustrate some of the features of congenital malformation and its treatment: Ashton reports the case of an imperforate child who died on the eighth day of peritonitis, unrelieved. There was a dimple externally, where the anus should have been, and a blind pouch of rectum only half an inch from the surface (*Trans. Path. Soc., London*).—Jonathan Hutchinson: Another case of death on the eighth day, while those in charge were hesitating about an operation. Here the external parts were perfect; an anal cul-de-sac ended in a septum at a depth of half an inch,

* In rare cases the communication of an imperfectly developed rectum with the vagina has remained undiscovered, being so free as to fulfill the functions of a vaginal anus. Morgagni dissected the body of a woman, who had reached the age of a hundred, in this condition; Ricord has a case of a young woman, a prostitute, who had the same malformation; and Switzer gives the history of a married woman, who had borne several children, whose husband was ignorant of her infirmity.

and then an impervious cord for another half inch, and then a blind rectal pouch distended by meconium (*Ibid.*).—Bryant reports a case in which the anus was situated out of the median line to the left side in an otherwise healthy child of fifteen months (*Ibid.*).—Sedgewick: Opening into vagina, with an external dimple and puckering at position of anus, but imperforate; rectum just within; probably a sphincter. This condition was only discovered after death from visceral disease at three weeks. It had not been suspected during life.—Heath: Case of numerous and remarkable deformities and malformations in the same child, with colon terminating as high up as the iliac fossa, and only a dimple externally.—Partridge: After an unsuccessful exploratory operation, and death, the rectum was found terminating by a very narrow canal within the bladder between the openings of the ureters.

The *first* variety which I have described, which is at the same time the most rare and the most easily remedied of all these deformities, requires only a free crucial incision with a lancet; after this the angular flaps will shrivel and disappear without further aid than the efforts of Nature.

In the *second* variety, the external sphincter may possibly be defective in development or even entirely wanting, like the anus. In fact, after a free incision in the median line, which will be found to traverse a thicker integument, when the tip of the finger is introduced, it may not enter a cavity; and, on deepening the incision to the extent of half an inch or more, it may become evident that the rectum as well as the anus is wanting. In other words, the malformation

is not simply an imperforate anus, as in the first instance, but the lower end of the bowel is also undeveloped: it is an *ano-rectal* imperforation.

These are also the anatomical features of the *third* variety, in which there is no sign of an anus; but they are present here from necessity. How far there is deficiency of the rectum in this case can only be determined by exploration. There is obviously an arrest of development, as in *spina bifida*, cleft palate, or harelip.

Embryologists tell us that, during the early development of the *fœtus*, in the process of budding from the "hypoblast," by means of which the various abdominal organs are evolved, the bud that pushes toward the anus to form the rectum is sometimes arrested in its progress, so that it fails to meet the bud from the "epiblast" which forms the anus; and the result is an interval in which the rectum is wanting—either a mere partition, or bulkhead, or a distinct space varying from half an inch to two inches in length, usually occupied by a "fibrous cord." This constitutes the *fourth* variety of malformation which I have indicated. It is correctly represented in Fig. 25, and is properly described as an imperforate rectum rather than an imperforate anus. After this general view of the several varieties of malformation which you will be liable to encounter in practice,* I shall confine my remarks mainly to the last variety,

* There are other and rarer varieties besides those indicated in the text, e. g., where the rectum opens externally, by a fistulous canal, in some abnormal situation, as at the navel, etc., of which there are some curious recorded cases. In fact, there is no limit to possible varieties, and there are no two cases exactly alike; but they are all amenable to the same rules, as to treatment, with the varieties already described.

for the reason that its symptoms and treatment include the whole surgery of the subject; and for the additional reason that, of all the varieties of imperfora-

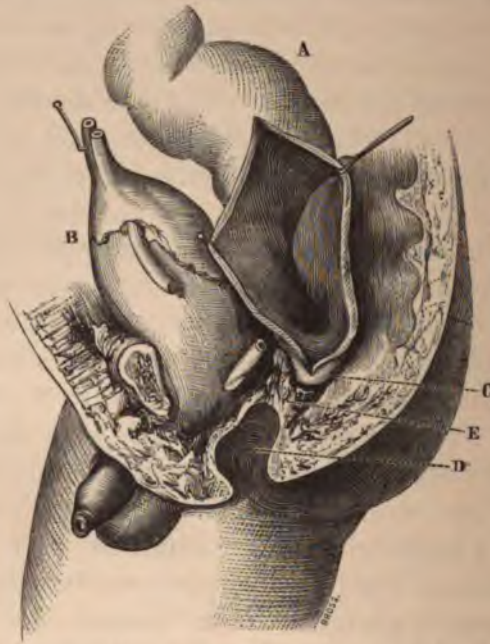


FIG. 25.—A, sigmoid flexure and rectum, terminating in a blind pouch; B, bladder; C, blind pouch of rectum contracting to a "fibrous cord"; D, anal cul-de-sac; E, fibro-cellular material between blind pouch of rectum and anal cul-de-sac. (Giraldès.)*

tion, it is most liable to pass undetected, and should therefore be kept well in mind.

When an otherwise healthy and well-formed child is reported by the nurse, on the day after its birth, to have had no passage from the bowels, although it may have taken the breast satisfactorily, the well-instructed attendant will at once examine for imper-

* *Nouv. Dict. de Méd. et Chir.*, t. ii, p. 617.

furation, and, even though an apparently well-formed anus may be found, he will proceed to explore the gut within. I repeat this intentionally, for neglect to early discover this variety of malformation will gravely imperil the chances of saving the life of the infant by surgery. Death is inevitable within a few days unless relief is at hand; and, when the child refuses the breast, and begins to fret and worry with colicky pains on the third day, changes have already begun which may interfere with the success of surgical treatment. As in the operation for the relief of strangulated hernia, delay in these cases means death.

And here a most serious point is to be clearly settled in your minds, lest you fall into the grave error of being influenced by the reluctance often shown by parents to permit the measures necessary to save the life of a child born with this defect. The heathen impulse that prompted the Spartan to sacrifice his deformed offspring and the Patagonians to strangle their aged women has not yet been entirely effaced from our nature by Christianity.* It

* "We must not permit sentiment, ever apt to err, to influence us in our treatment. Our duty is to do the best for the tender patient. Is it for us to say, 'Life in such conditions would not be worth living'? The usefulness of a life need not depend on the possession of limbs nor on the position of an anus.

"Christianity and a civilization which has been directly and indirectly influenced by it have induced in us the belief that human life is not of the mere value of that of a sparrow or two, and to delay or to withhold that aid which alone can save the existence of the infant, simply because the idea of the child growing up with an abnormal anus is to us unpleasant, is but to acquiesce in the barbarian practice of destroying imperfect babes. If once we allow such a principle to regulate our practice, it will follow us till tenderness itself is driven from our art.

"If, as St. George Mivart tells us is the case, 'Life is an arena for the exercise of free volition,' the child who can survive with an abnormal anus has surely not lost the privilege of such an exercise. Prof. Mivart goes on to say,

is your duty to make known, in the proper quarter, that you have discovered an obstruction in the lower bowel of the infant, which will cause immediate and cruel suffering, and ultimately its death, if not remedied at once; that the necessary proceeding is attended by more or less danger, but that it is entirely justifiable, and you regard it as a duty to undertake it without delay, as nothing is to be expected from Nature, and promptness is of absolute importance.

If you are unable to restore the natural vent, and are even obliged to make an artificial outlet, you have simply done what it would have exposed you to a just charge of ignorance or criminality not to have done; and intelligent and right-minded parents will reconcile themselves to the inevitable, and may possibly estimate your skill at its just value.

What, then, are the remedial measures, in the more serious varieties of imperforation, which good surgery demands? Obviously to make an outlet for the contents of the occluded bowel which shall be not only free but permanent. In all cases, except where an otherwise well-formed anus is closed by an integumental film curable by a simple crucial incision, we have seen that there is probably a deficiency in some degree in the rectum itself; and, when this exists, simple incisions, however successful in freeing the bowel at first, will inevitably tend to heal, and, in

‘Human life, as the life of a being whose moral nature makes its existence an end in itself, is of incomprehensible, of infinite significance. From this point of view, it is plain how grievously those err who would urge the destruction of deformed or unhealthy children, and who would sanction euthanasia and the painless extinction of the aged and hopelessly sick.’” (Harveian Lectures for 1879, by Edmund Owens, F. R. C. S., etc., London. “The Surgery of Childhood,” etc., reported in *Louisville Med. News*, May, 1880, p. 223.)

healing, to contract and form a cicatricial stricture of the usual obstinate character. This, almost without exception, is the history of these operations by incisions alone, even where the gut is reached and fairly opened. They are inadequate; the new outlet lacks permanence. I have in several instances succeeded by careful dissection in reaching a fluctuating point of a blind rectal pouch, and in establishing a free outlet for the meconium; but in no case has it proved permanently useful. It has always been necessary to employ bougies or tents, more or less constantly, to keep the new canal from contracting; and the care and pain and trouble of fighting against the closing stricture and the persistent tendency to obstruction and fæcal accumulation have invariably led to early death. At present I know of no such case treated in this way in which a permanently satisfactory result has been attained. Sir Benjamin Brodie, regarded as the soundest surgeon of his day, has recorded his opinion as to the hopelessness of this mode of operating, by declining to undertake it; and Amussat, in 1835, announces that, although it was constantly resorted to, he had sought in vain for a case of permanent success.*

* *Observation sur une Opération d'Anus artificiel, etc., par un nouveau procédé, Lue à l'Institut, Novembre, 1835.*

In the *N. Y. Journal of Med.* (November, 1854, p. 319), Prof. Willard Parker published "brief notes" of ten cases of ano-rectal imperforation, all treated by puncture by trocar or bistoury and subsequent dilatation, with success at the moment. Seven of the ten cases died soon after the operation; three are noted as having recovered, two of them "perfectly." It is to be regretted that these cases of recovery were not verified by a subsequent note of their actual condition after several years. I have been unable to find any circumstantially authenticated examples of perfect recovery after this operation; but I have heard of several instances of bad consequences following the use of the trocar. My own experience in this mode of operating covers only failures.

It was, in fact, to obviate this difficulty that Amusat, in the year 1835, devised the novel resource of dragging down the upper rectal cul-de-sac and stitching it to the edges of the perineal opening, thereby establishing a canal continuously lined by mucous membrane, and, consequently, free from danger of contraction. This was a decided improvement; as his English reviewer terms it, "a most meritorious and happy inspiration." His first case was entirely successful, and this method, since known as "Amusat's operation," has been generally adopted. In this city it was done, in 1856, by the late Dr. Meier, of Bellevue Hospital, and more recently, with success, by Prof. H. B. Sands.*

*In Dr. Meier's case (*Amer. Med. Monthly*, June, 1859, p. 440) there was no sign of an external anus, no perineal impulse, the ischial tuberosities were abnormally approximated, and the child's pelvis was contracted. He operated on the third day, the parents not permitting earlier interference. By careful dissection he reached the blind end of the rectum, situated as high as the promontory of the sacrum, recognized it by exploration, and succeeded in dragging it down and attaching it by numerous sutures to the margin of the external incision. The new opening was entirely satisfactory; but, in consequence of the child's exhaustion from delay, it died on the fifth day. No post-mortem was allowed.

In Dr. Sands's case, of which he kindly furnished me a note, the child passed a little meconium with the urine, showing that the undeveloped rectal pouch communicated with the bladder. There was not so much urgency, therefore, in the symptoms, and he was not called to operate until the thirteenth day after birth. There was no trace of an anus, except a minute depression at the point where it should have been, and no fluctuation or impulse was discoverable even after a crucial incision. The distended pouch was encountered at about three quarters of an inch, and incised so as to admit the little finger; it was then brought down and stitched to the edges of the perineal incision by four points of suture. Ten days after, Dr. Sands was informed that the child was doing well. Nearly six months later, Dr. Wright, of Glen Cove, whose patient was the subject of the operation, wrote that the case had progressed favorably from the outset, and the condition of the child at this date was one of perfect health. Action of bowels natural and regular; "power of sphincter ~~ani~~ perfect." Dr. Wright had noticed "a marked tendency to coarctation" for a time after the first healing, which he overcame by daily insertion of the finger, which was continued by the mother for more than a month, when it seemed no longer necessary.

This is the plan that I would advise you to carry out wherever the lower end of the rectum is wanting or seriously defective; that is, whenever it is feasible without too deep a dissection, or without incurring unjustifiable risk. The pelvic outlet in a new-born infant is at best a narrow and difficult surgical region in which to operate. The arrest of development may be more extensive than in any of the varieties I have described; the rectum may possibly be entirely absent, and the whole pelvis contracted. As a rule, even in a well-formed child, the dissections should not be carried farther than an inch and a half in search of a blind pouch of rectum. By way of enlarging the external opening, so as to aid in finding and detaching the rectal pouch, Prof. Verneuil, of Paris, has exsected the coccyx in several instances, and speaks well of this addition to Amussat's operation, as enabling him to advance more readily along the concavity of the sacrum.*

The practice of thrusting a trocar beyond the reach of the finger in search of meconium in this dissection, or, indeed, under any circumstances of imperforation, is an unjustifiable proceeding. The trocar

* Verneuil reports (*Gazette des Hôpitaux de Paris*, July 29 and August 5, 1873, pp. 694 and 715) six cases of "ano-rectal imperforation," presenting themselves in the course of ten years, in which he resected the coccyx—at first partially, afterward completely—in order to secure more room to search for the blind end of the rectum; and he asserts that this measure greatly facilitated his efforts to drag the rectum down so as to attach it to the perineal opening, which he succeeded in doing more or less completely. Where there was an anal cul-de-sac, he laid this open posteriorly, carrying his incision toward the coccyx, which he removed as far as was necessary, in order to accomplish his object, and subsequently attached the edges of the incised rectal pouch to those of the anal cul-de-sac so as to secure the services of the sphincter as far as possible. When the operation was recovered from, the new anus worked well, and the loss of the coccyx seemed to cause no difficulty.

is an instrument by which much harm has been done in this region. I have knowledge of cases where escape of urine has followed its use in exploration—the bladder having been punctured; and also of a case where a jet of pure blood welled up—probably from an iliac vein, requiring the tampon, and followed by the worst result. Even the more cautious use of an exploring needle is not entirely safe. Fluctuation may sometimes be detected at the bottom of the wound by the end of a finger, when a counter impulse is made by the other hand from the hypogastrium or the iliac fossa, or when the infant coughs. In this operation there should be no desperate efforts undertaken if success is not readily attained after a careful dissection within a safe limit; and, above all, do not thrust blindly in search of an outlet, which, when enlarged by dilating instruments, shall be assumed to be a successful result of the operation, because it gives issue, for the moment, to meconium. I have already pointed out that this will not prove to be a free and permanent opening.

The proper course to pursue, after failure to find the rectum from the perinæum, is to open the sigmoid flexure of the colon in the left groin, with the view of establishing an artificial anus in this locality.

This surgical proceeding was first suggested by Littre, of Paris, in 1710, after examining the dead body of an infant that had died on the sixth day after birth with a malformation of the variety shown in Fig. 25. As Littre describes the case, there was a perfect anus and cul-de-sac below, and a blind rectal pouch above, with an interval of fibrous material be-

tween them.* In the hope of saving life in a similar case, the eminent anatomist proposed to open the belly of the child and bring the intestine to the wound, "which should thenceforward be prevented from closing, that it might perform the function of an anus." This was also a true inspiration, which has already saved many lives. Nearly a century later, it was proposed by a Swedish surgeon, Callisen, as a resource in congenital imperforation, to open the colon in the left loin,† an operation which has since gained great favor for the relief of rectal disease in the adult, but is not so well suited for the infant, for reasons yet to be stated. Strangely enough, the operations they had the great merit of suggesting were never performed, either by Littre or Callisen.‡ Littre's suggestion was first put in practice for congenital malformation, in December, 1783, by the elder Dubois (Antoine), professor of midwifery in the University of Paris, upon an infant three days old, without any appearance whatever of an anus. The child was relieved, and lived ten days. After death the sigmoid flexure of the colon was found perfectly united to the edges of the abdominal wound, thus proving the feasibility of the operation. Ten years later, in 1793, Duret, chief surgeon of the Naval Hos-

* Dans l'Histoire de l'Académie des Sciences pour l'Année, 1710, p. 36. Vide *Mémoire sur la Possibilité d'établir un Anus artificiel*, etc., Paris, 1839, deuxième partie, p. 84, par J. Z. Amussat.

† *Systema chirurgica*, etc., vol. ii, p. 638, 1800.

‡ And Littre's operation was first performed sixty-six years after its suggestion, on an adult, for cancer of the rectum, by a French surgeon at Rouen, —M. Pillore— who opened the cæcum. His patient was relieved of complete obstruction and survived about a month, dying of gangrene caused by the weight of two pounds of metallic mercury, which had been administered before the operation in the hope of relieving the obstruction.

pital at Brest, did the operation in a similar case, on the third day.* The child recovered, and survived, with the artificial anus, until the age of forty-three.† In the next year, 1794, Desault repeated the operation in Paris on a child without any anus, who survived four days. Since 1794, Littre's operation, or, as it is now called, inguinal colotomy, has been resorted to with steadily increasing frequency in cases of congenital imperforation with deficient rectum. Giraldès, a late French author on this subject, gives a tabular statement, including thirty-two cases, in which the child survived from twenty-four hours to forty-nine years.‡ Although its safety and a fair probability of its ultimate success have been thus fully established, this excellent operation has made its way but slowly, mainly in consequence of the sentimental objection to prolonging life on such terms as an artificial anus imposes. Yet it has been done by right-minded men everywhere. Dr. Pooley did it, in 1869, at Yonkers, on the Hudson, with entire success, his patient surviving more than four years in excellent health, with no complaint on the part of the parents as to the practical working of the inguinal anus.§

* *Recueil périodique de la Soc. de Méd. de Paris*, t. iv, p. 45.

† In a paper by M. Rochard, in the *Mém. de l'Acad. Imp. de Méd.*, t. xxiii, p. 195, Paris, 1859, there is a lithographic picture of this man, and another of his artificial anus, of the natural size. He died in 1836. There is also a similar representation of Marie Perrine, operated on in 1813 by M. Serraud. This woman was afterward a nurse in the hospital, and enjoyed good health. She died at forty-nine. In both these cases there was a permanent prolapse of the lower portion of the gut, which, however, caused no complaint.

‡ Art. "Anus," *Nouveau Diction. de Méd.*, etc., t. ii, p. 634. There are cases in this table which survived respectively 10 months, 14 months, 2 years (in two instances), 27 months, 5, 14, 19, 22, 40, 43, and 49 years.

§ In this case a healthy male child, weighing ten pounds, and presenting no sign of any anal opening, was operated on upon the third day (September 26,

In Mr. Curling's valuable "Inquiry into the Treatment of Congenital Imperforation of the Rectum," based on the study of a hundred collected cases,* fourteen of them were subjected to inguinal colotomy, and of these nine recovered. In seven, the colon was opened in the left loin, and two of the infants survived, one of them living to be seven years old. The advantages of the inguinal operation which Mr. Curling recognizes are admitted by most recent writers on this subject, mainly for this reason: that the descending colon in the infant is furnished with a mesocolon, which permits so much freedom of motion that it is not always easy to reach it from the loin without opening the peritonæum.† The greater mobility of the whole large bowel in the infant, which results from its mode of development in the embryo, explains

1869), by the perinæum, and, failing to discover any traces of a rectal pouch after dissecting "fully three inches," Dr. Pooley proceeded to open the colon at the left groin, and the child did perfectly well. Five weeks afterward a prolapse of several inches of gut took place, and chloroform was given before it could be replaced. About the end of 1873, when the child was over four years old, after a temporary looseness of the bowels, a prolapse recurred at the artificial anus, which had meanwhile been the cause of no complaint. There was some difficulty experienced in reducing this, but it was finally effected under chloroform. The child died rather suddenly about six hours afterward. At the post-mortem, a small laceration was discovered in the bowel, near the artificial anus. In the memoir of M. Rochard, already quoted, he speaks of the frequency of prolapse after this operation, and attributes it to want of careful early management of the wound, as most of the cases he had observed had been among the poor.

* *Med.-Chir. Trans.*, vol. xliii, 1860, p. 270.

† It is to be credited to Duret that, in his first successful case of inguinal colotomy in the infant, in 1793, he had previously tried opening the colon in the loin in the dead body of a child a fortnight old, which he had procured from another hospital, and satisfied himself and his colleagues of this fact before commencing his operation on the living child. He says (*op. cit.*, p. 90) that "the lateral aspects of the colon are not outside of the peritonæum, as in the adult, but free and floating." In the language of a recent writer, "the stalk of the mesocolon is so long that the gut is almost entirely surrounded, and is floating free in the peritonæal cavity."

why the sigmoid flexure is also sometimes found absent from its normal position, and even as far away as in the right groin. It has even been discussed as to which groin should be selected for the operation, but accumulating experience has demonstrated that the left is decidedly to be preferred.*

Perhaps the best answer to those who object to an inguinal anus on sentimental grounds, and the best proof of its practical efficiency, is to be found in the case of the lady related by Mr. Curling in the paper already quoted, who had been subjected to the operation in 1816, and who, at the age of forty-three, "constantly enjoys the best health, goes into society, and attends balls, and no one would suspect her to be the subject of any infirmity. She is married, has borne four children, and her pregnancies and labors have been quite normal. She never experiences any pain in the part." To sum up: In the present state of our knowledge, good surgery requires that, in a case of ano-rectal imperforation, the first effort should be to reach the rectum through the perinæum, to bring it down and make it fast at the position of normal vent, or to accomplish this as nearly as possible. This rule applies to all varieties of the malformation in which the rectum is in any degree deficient. Amussat's original case was an example of a very rare variety of the deformity. To find the rectum by this route and open

* Le Teinturier (*Bull. Soc. Anat.*, 1871, p. 311) says that Giralès found the sigmoid flexure in the left iliac fossa in the infant 114 times in 134 cases; Curling, 85 times in 100 cases; Boncart, 117 times in 150 cases. Mr. Curling (*ut supra*) tried *inguinal* colotomy in twenty dead children, and failed to find the sigmoid flexure in the left iliac fossa in two; in twenty *lumbar* colotomies under the same circumstances, he failed to reach the colon without opening the peritonæum in six. He prefers the left groin for colotomy in the infant.

it, without bringing it down and making it fast below, is not satisfactory, for the resulting canal and outlet will lack the quality of permanence through tendency to contraction. Inguinal colotomy would be preferable to this as an alternative.

If the rectum can not be reached through the perinæum, it is the surgeon's duty to undertake colotomy without delay, and to give preference to the left groin as the seat of the opening.

In the exceptional event of not finding the sigmoid flexure in the left iliac fossa, the proper course would be to enlarge the inguinal incision so as to admit the hand, if necessary, to search for the sigmoid flexure, to draw it toward the lowermost angle of the incision and to make it fast, carefully closing the rest of the abdominal incision by deep sutures. The operation in this case will have become, by necessity, laparotomy for relief of acute intestinal obstruction—a proceeding fully sanctioned by modern surgery.

After successful inguinal colotomy, a catheter or flexible sound, passed from the new anus downward into the rectum, demonstrated the presence of a rectal pouch in the pelvis, in two instances recorded by Mr. Owen, so near to the perinæum as to call, apparently, for an attempt to establish a new anus at its normal position; but the peritonæum was necessarily opened in both cases, and, although efficient drainage was employed, they unhappily proved fatal. This experience should suggest hesitation, at least, in undertaking a similar enterprise.*

* Mr. Owen's experience on this subject is of great interest (Harveian Lectures for 1879, *ut supra*). He is senior assistant surgeon to St. Mary's Hospital, and to the Hospital for Sick Children, London.

"I have had under my care five subjects of imperforate rectum on whom I

Fæcal Impaction.—As a consequence of improper food, inattention to the duty of securing full and satisfactory daily stools, or a lack of healthy tone in the organs of digestion, you will occasionally meet with an accumulation of hardened fæces in the pouch

have had to perform Littre's operation, and in four of them I had first vainly attempted to reach the pelvic piece of the bowel by a dissection from the perinæum.

"The first was a male, three days old, which had no anus or anal portion of rectum. He was in great distress from sickness and peritonitis. A staff was passed into the bladder, and, an unsuccessful dissection having been made, the patient was placed in the horizontal position and the peritonæum opened in the left iliac fossa. The sigmoid flexure was at once found and the artificial anus completed. The babe did perfectly well, but at the end of three months I made another attempt to establish a perinæal anus, passing a flexible bougie down the sigmoid piece of the bowel. The operation was accomplished, but the post-mortem examination, made in the course of a few days, showed that the peritonæum surrounding the rectum had been damaged.

"The second was a male child, a few days old, whom I saw with Dr. Dandford Thomas. It had no trace of anus and was continually retching, but, when the colon was opened, the patient became bright, and died in comparative comfort on the third day. By no persuasion could I induce the father to permit an autopsy. 'The child,' he argued, 'has already suffered enough.'"

In the fifth case, a boy, "the anus and its cul-de-sac were well formed. The abdomen was distended, and the babe was very sick. It was not considered advisable to dissect through or puncture the unyielding roof of the cul-de-sac, lest the peritonæum might be wounded. On opening the left iliac fossa, coils of the colon, of the caliber of an ordinary vaginal speculum, and stalked upon a mesentery two inches wide, escaped. The patient flourished, and at the end of three months was in excellent condition, but for some severe prolapse of the bowel. After consultation with my colleagues, we determined to try to establish the continuity of the two pieces of the rectum; especially as, on inserting one finger into that part of the colon which descended from the wound, and another into the anal piece, they seemed to be separated by but a thin layer of tissues, through which a firm director was readily passed. The communication so made was then dilated, and a drainage was run from one anus to the other. The babe died next morning from shock and from peritonitis, which was the direct effect of the puncture, the upper cul-de-sac being thoroughly ensheathed in the serous layer."

Mr. Owen concludes his lecture as follows: "Granted, then, that an artificial anus must be performed, let the groin be opened, and let no sharp instruments be at any time blindly thrust upward into the interior of the pelvis through the carefully performed dissection in the perinæum. Let there be no delay, no waiting for symptoms, which in tender babes are but the beginning of the end,

of the rectum—most likely in an elderly female—which will require surgical aid for its removal.

The symptoms of impacted fæces are neither clear nor suggestive, and the patient, restrained by the modesty of her sex, will not give you much aid in verifying them. Sensations of weight and uneasiness in the pelvis with teasing desire to seek relief at stool, frequent calls with unsatisfactory loose dejections, perchance irritability of the bladder, and not infrequently intervals in which there is but little occasion of complaint, may be readily mistaken for symptoms of uterine trouble, or possibly for diarrhœa or dysentery. An otherwise healthy single lady of thirty-five was brought to me by her physician, who suspected "fissure." For some weeks she had been costive, which was unusual to her, had felt like straining a good deal at stool, and castor-oil had brought no relief. Complaint of pain and soreness at the anus was, in fact, her most prominent symptom. On exploration, the finger encountered immediately above the sphincter a globular mass apparently the size of a fæcal head. With a little effort the extremity of the finger could be made to indent it, and when the mass was forcibly impinged upon for this purpose a sense of general uneasiness and pressure was felt, but no acute pain. When bored into it a short distance, the finger received the sensation of the mass being granular in consistence. On further inquiry, I found that

no expectation of a manifest bulging of the upper piece of bowel. It may never become filled at all, for, as in one of my cases, the meconium may grow firm and scanty from an absorption of the watery part. And should the operation be a success, as regards saving life at least, let there be something more than hesitation at the subsequent proposal to attempt the construction of another artificial anus at the most convenient site."

there was a constant sensation, as from distention in the rectum, but no positive pain. She had passed some little masses which seemed to her to consist largely of strawberry seeds, and had ceased eating that fruit. This patient preferred to try what could be effected in the way of relief by using the vaginal attachment to the Davidson apparatus in making an impression upon the fæcal mass, which I explained to her was the whole cause of her trouble; but she returned in a few days confessing failure, and asking for more prompt relief. The mass was easily removed by patient use of the lithotomy scoop, alternating with injections of tepid water.

The symptoms of impaction are not sufficiently urgent at first to compel elderly women to seek relief. Cruveilhier* tells us that his eight years' service in the insane wards at Salpêtrière, the Paris hospital for incurable women, taught him that there is a "fæcal stagnation with overflow," just as there is of urine in an over-distended bladder—a small quantity of fæces being passed daily and a great deal more left behind. Cruveilhier relates a case, which he says did not surprise him, in which Roux was summoned some hundreds of miles from Paris to remove a pelvic tumor in an old lady, when the operation really required was to empty her rectum of an enormous mass of fæces.†

* *Path. Gén.*, vol. ii, p. 868.

† *Case* (from *Gaz. Méd. de Paris*, July 20, 1839).—A woman of fifty was troubled with habitual diarrhœa and frequent calls to urinate, in which urine could only be discharged by drops. After six years' suffering and unsuccessful use of remedies, she was examined for the first time per anum, and an accumulation of fæcal matter discovered, forming a mass the size of an infant's head. This was removed, and found to weigh four pounds. She then got well.

Bushe (*op. cit.*, p. 60) relates the case of a lady who for seven years had

I think, from what I have said, that you will not readily overlook the possibility of impaction of fæces, and I must advise you not to delay physical exploration, which, when any symptoms of this condition present themselves, is an unavoidable duty. If necessary to carry your point in this matter, propose an exploration under ether. There is a certain power which comes from knowledge that enables the physician, who knows how to use it, to overcome the natural reluctance of a patient in a case of this kind. There is little use of administering cathartic medicine after impaction has taken place. The hardness of the mass is so great that the action of a laxative will make no impression upon it; indeed, after its pres-

been subject to constipation and repeated attacks of colic. Called to visit her in one of these paroxysms, he discovered, on examination per anum, a large concretion in the pouch of the rectum, which he removed unbroken, by strong and long lithotomy forceps, with but slight laceration of the mucous membrane. It measured six and three quarter inches in circumference, and two and a half inches in length. A speedy recovery ensued. A case of large concretion formed by a mixture of fæcal matters and calcined magnesia in the rectum of a lady was observed by Dr. Dunlap, of Norristown, Penn.

Mr. Jonathan Hutchinson relates the case (*Trans. Path. Soc.*, of London, vol. vi, 1855, p. 203) of a lady past middle age, who had suffered for twelve years from pain in the lower bowel and constipation, *for which she had taken a black draught every night for twelve years*. Previous to this period she had taken magnesia largely for dyspepsia, and iron for neuralgia. Her sensations finally led to rectal examination, when a huge concretion of mineral hardness externally was discovered. It was softer at one point, and was perforated by a pair of long polypus forceps and removed piecemeal, injections aiding. The fragments filled a goblet. The shape of the concretion was irregular. The patient recovered, losing some peculiar symptoms, such as pain in certain positions, and general "misery."

Dr. R. Hazlehurst, of Brunswick, Ga. (*Am. Jour. Med. Sci.*, October, 1852), removed a hundred and thirty plum-stones impacted in the rectum of a negro, who had eaten ten quarts (as was ascertained) of that fruit. The negro resisted all efforts to relieve him, and took to the swamp to die, suffering greatly. He was finally caught and tied. The operation lasted three hours, as it was necessary to remove each stone separately by the forceps. There was much subsequent rectitis, but the patient got well.

ence has been recognized in the rectum, it would be unwise to employ cathartics. Nor is the effect of injections into the bowel more successful; even the diluted ox-gall, which has been recommended as a solvent of these semi-calculous concretions, fails in disintegrating them. The proper and only course to pursue is to break up the mass by careful manipulations with an appropriate instrument—and the best for this purpose is a lithotomy scoop, the handle of an iron tablespoon, or a double wire of sufficient size with its loop bent into a hook—and then inject with soap-suds or tepid water, repeating this manœuvre until there is nothing left that will escape through the anal orifice. This is a disagreeable operation, and there is no escape from it; but its result is usually highly satisfactory.

Foreign Bodies in the Lower Bowel.—The surgery of the lower bowel includes, also, the means to be employed for the removal of hard substances not found within the intestinal canal, but introduced from without, and called, therefore, “foreign bodies.” Generally lodged in the rectum, either by accident or design, it has happened in rare instances that, after having been introduced through the anus, they have found their way upward into the colon as far, even, as its transverse division.

The records of surgery contain many curious cases of foreign bodies in the lower bowel, which are attractive from their strange features; but we shall confine ourselves mainly to the indications for their surgical treatment.* Foreign bodies which we are called

* The essays of Morand, Hevin, and others, in the *Mémoires de l'Académie royale de Chirurgie*, are the ultimate source of much of the histological matter

upon to remove have been either swallowed—as in the cases in which false teeth, a lead-pencil case, or fragments of bone have become fixed in the rectum by their sharp projecting points—or introduced through the anus unintentionally, as where, patients having sat upon a mass of wood or stone, or an inverted, conical tin drinking-cup (as has happened in more than one instance), to aid in reducing protruding piles or prolapse, the mass has slipped in through the dilated sphincter; or where a piece of wood, a fragment of a cane, for example, has been introduced to aid in provoking a stool in obstinate costiveness; or where criminals have used the rectum as a place of concealment for money, or tools with which to effect their escape; or, finally, where, in a drunken debauch, a tumbler or a bottle has been thrust through the anus by the malice of a more sober companion, or a paving-stone, as in the case of a workman relieved by the late Valentine Mott, in the New York Hospital: this man said his mates did it while he was drunk.

There is reason to believe that a smooth mass two inches and a half in diameter, or even larger, may be extruded from the rectum of an adult; and a moderately smooth foreign body introduced from without, if of a conical shape, and if its small end be downward, may be trusted to escape through the anus by the efforts of nature. But a bulky mass, with a conical extremity which happens to be directed upward, is pretty sure to travel upward, and get beyond reach in the sigmoid flexure of the colon, or even higher.*

connected with this subject. Bushe's fourth chapter contains many learned details, with old and rare cases; and Mollière, at p. 732, *et seq.*, of his late monograph, gives an ample résumé of more recent records.

* This has been demonstrated by M. C. Gérard in a recent essay, "*Des Corps*

The danger to life when a foreign body is lodged in the large intestine is very serious. Nearly a fourth of M. Gérard's thirty-four cases terminated fatally. The danger is greater when the foreign body travels upward beyond reach. In cases not interfered with, the fatal result has been delayed for months, but peritonitis has almost invariably supervened, and inflammation of the rectum, local gangrene, abscess, and fistula are of possible occurrence. In cases subjected to operation, the nature of the foreign body influences the result, as in the instance in which a beer glass broke while Velpeau was endeavoring to remove it,* and, notwithstanding extreme precautions were employed to protect the rectum, the gut was seriously lacerated, and the man died in eight days from abscess in the pelvis. In other cases the prolonged efforts required for removal have been followed by rectitis and fatal consequences.

There is not often difficulty in diagnosis after careful exploration, which is in most cases called for by complaint of pain in the rectum and abdomen, and possible obstruction to defecation; but these symptoms may be referred to other causes, and laxatives administered where the patient, as in Mr. Thomas's case, hesitates at first to confess the real cause of the

étrangers du Rectum, leurs Migrations dans l'Intestin, et leur Histoire," Paris, 1878. M. Gérard has collected thirty-four authentic cases, in seventeen of which the foreign body remained in the rectum; in twelve it traveled into the sigmoid flexure; and in five still higher up. In a case reported by Velpeau to the *Académie de Médecine* (*Gaz. Méd. de Paris*, 1849, p. 684), the bottom of a long Cologne-water bottle could be distinctly felt beneath the false ribs on the *right* side, while he could touch the open end of the bottle, which was a little over eleven inches in length, with the finger in the rectum. It was safely extracted, and left no bad consequences.

* Nélaton, *Pathol. Chirurg.*, t. v, p. 42.

trouble through shame. A gentleman, to relieve obstinate costiveness, had been in the habit for many months of introducing daily a piece of a walking-stick, as thick as the finger and nearly ten inches in length, into the lower bowel, and this in a little time would provoke a desire for stool. One day this strange suppository slipped entirely within the rectum. Through reluctance to disclose his awkward condition, he allowed seven days to pass before sending for aid, although suffering great distress and distention of the belly, and then, in a sort of hysterical paroxysm, confessed what had happened to him. The surgeon could feel one end of the stick forming a hard lump in the iliac region, but failed to reach its other end with the finger in the rectum. He did succeed, however, in touching it with a rectal sound introduced as far as the promontory of the sacrum, and, administering a full opiate injection, he withdrew to mature a plan of treatment. At the end of two hours Mr. Thomas found the anus so much relaxed that he could easily insert two fingers, and was encouraged to attempt to introduce the whole hand, which, in about twenty minutes, he succeeded in doing, and in reaching the lower end of the stick. This he found firmly fixed in the cavity of the sacrum, but, by making the patient bend his body forcibly forward, he finally disengaged it and drew it out. The recovery was prompt. This most creditable case is recorded in the first volume of the *Medico-Chirurgical Transactions*, published in the year 1807.*

* Thiandière has a case very similar in many of its details, in which he introduced his hand into the rectum, finger by finger, and succeeded in removing a forked stick. (*Bull. Gén. de Thérapeutique*, January, 1835.)

Before undertaking operative measures for the removal of a foreign body from the lower bowel, it has been recommended to use the warm bath and warm enemata of flaxseed mucilage to secure general and local relaxation; but, with the aid of complete anæsthesia and vaseline for lubrication, these preliminaries are hardly necessary. When the foreign body is within reach, its nature and shape will inspire the surgeon as to the readiest and most effective aids to fingers, such as lithotomy or obstetrical instruments—especially forceps.* The blades of the instruments may be bound with cloth or chamois to prevent slipping, and, in the case of glass, precautions should be taken to avoid too great crushing force. The sphincter should be fully stretched, or, as Esmarch advises, it may be freely divided in the median line back to the coccyx, if the necessity seems urgent.† The introduction of the hand is a most rational proceeding, which has proved both safe and effective. Long before Mr. Thomas's case, a child of ten had been trained by a French *sage-femme* so as to successfully extract a bottle from the lower bowel by inserting the hand. The danger of this proceeding is not great where the hand is small, i. e., not exceeding nine inches in its greatest circumference, and where the manœuvre is executed slowly and with great gentleness.

These resources failing, it would be proper to re-

* M. Desormeaux (*Bull. Soc. Chirurg.*, February, 1862) succeeded in removing a bottle by the obstetrical forceps, applied with the aid of the hand introduced through the sphincter; and, more recently, M. Péau (Gérard, *ut supra*) extracted a large mass of turned wood, five inches long by three in diameter, by seizing it with a cephalotribe. Both cases were successful.

† *Ut supra*, p. 65. Esmarch remarks in connection with this advice that incontinence seldom results from this measure, an opinion that is disputed by some.

sort at once to laparotomy, as was done at Orvieto, in Italy, in 1848, by M. Réali;* at Copenhagen, in 1878, by M. Studsgaard; and again, quite recently, in Paris, by M. Verneuil.†

There is a condition described in the books as *atony of the rectum*, in which the muscular coat of the intestine has lost its contractile power in a greater or less degree, and the ability of the patient to expel the contents of the lower bowel is consequently im-

* A gardener, "to economize in food," had plugged his rectum with a piece of wood, which he had carefully carved with barbs so as to prevent its slipping out. Nine days afterward he was brought to the hospital in great agony. The mass had mounted beyond the reach of the finger, and, in consequence of the barbs described by the patient, and the existing inflammation of the rectum, M. Réali made no effort to extract it from below, but proceeded at once to open the abdomen, and thus safely delivered his patient, who made a good recovery. (*Gaz. Méd. de Paris*, 1849, p. 895.)

† In M. Studsgaard's case (quoted by Gérard from Bulteau, *Thèse de Paris*, "*De l'Occlusion intestinale*," etc., 1878), a *valet-de-pied* of thirty-five had inserted a glass bottle into his rectum with the object of stopping an urgent diarrhoea, and was brought to the hospital the next day with much pain of belly, vomiting, and exhaustion. The end of the bottle could be felt in the left iliac fossa. The same evening the anus was divided in the median line posteriorly, and the hand introduced, but it could not be carried beyond the upper contraction of the rectum, and it was found impracticable to push the bottle down into its grasp, so that an incision four inches long was made without delay in the median line of the belly from the naval downward, under antiseptic precautions, a coil of the sigmoid flexure drawn out and opened for about an inch and a half, when the bottle was seized by its neck and extracted. Cat-gut sutures were carefully applied, and the patient, after a pelvic abscess which was opened from the rectum, got well. There was no delay in the recovery of power to retain the feces.

In a private note from my friend Dr. L. A. Stimson, from Paris, May, 1880, he details the condition of a patient in M. Verneuil's wards at La Pitié, upon whom a similar operation had been done by that surgeon some five days before. In this case the foreign body, which lay just below the sigmoid flexure, was a chunk of cherry wood with the bark on it, two inches in diameter and about four inches long, somewhat pointed at one end, and it had been introduced eight days before his admission. "Linear rectotomy" in the posterior median line had been carried to the coccyx, and, this measure not leading to success, laparotomy was done in the median line, an incision of six inches being made from the umbilicus downward, and the foreign body extracted. At the time he was seen by Dr. Stimson, the patient promised recovery.

paired. This affection is not a true paralysis from loss of nerve power, but a local impairment of muscular contractility. It is not an uncommon ailment, belonging rather to mature and advanced life, and it affords an explanation of the cause of costiveness in many cases. It is brought about by sedentary habits, neglect of the calls of nature, and consequent habitual over-distention of the muscular walls of the gut; in some cases, by too constant or extravagant use of injections.

The observance of regular habits, the use of a dinner-pill containing aloes and nux vomica to assist in establishing this necessary condition, and perhaps the administration of a tonic internally with minute doses of strychnia in combination, constitute the best remedies for this malady.* The injection of a gill or two of cold water after each stool, as a temporary measure, would also assist in restoring the lost tone of the muscular fiber; but a regular daily visit to the water-closet is the *sine quâ non*.

* A prescription which has been very useful to me, especially in women, is as follows:

R. Ferri sulphatis exsiccati.
Quinæ sulphatis, aa ʒij.
Ext. nucis vomicæ.
" aloes, aa gr. xij. Pil. xl.

S. One three times a day.

These pills are known to many New York apothecaries as the *Pil. quatuor*, a name given by the late Benjamin Canavan, one of our best pharmacutists.

I have also used with advantage for many years the following formula for a dinner-pill, originally, I believe, a prescription of my friend Prof. J. T. Metcalfe, M. D., and known as the *Pil. Salutis*.

R. Ext. aloes.
" hyoseyami, aa ʒj.
" nucis vomicæ, gr. iv.
Ol. anisi, gtt. iv.

M. s. a. ft. pil. No. lx.

A most important consideration in connection with diseases of the rectum is their accurate *diagnosis*. The means to be employed in order to recognize these different affections promptly and certainly are worthy of our best attention. You will readily call to mind the instances I have already mentioned in which *eczema of the anus* has been denominated "pruritus," and *irritable ulcer* miscalled "neuralgia"; a symptom in either case having been mistaken for the disease—the true nature of which not being recognized, failure in its cure was the natural result. In like manner, benign *stricture* and *irritable ulcer* have been called "cancer," and patients with curable diseases thus abandoned to unnecessary suffering. Accurate diagnosis is in our profession the unerring test of ripe scholarship and thorough education, and of all the qualities of a physician it is that which most certainly insures success in curing disease, and consequent reputation. Imperfect diagnosis, in truth, is a very common fault, especially so, perhaps, in the class of ailments which we are studying; for the seat of them, in the decency of Nature, is hidden away as it were in a recess of the body, and natural modesty is always averse to exposure. Moreover, our means of exploration have been, until recently, very defective—entirely insufficient to overcome satisfactorily the jealous sentinelship of the sphincter ani muscle.

The different varieties of the speculum ani which I here show you are ingenious in construction and possess a limited value in their application, but practical surgeons have experienced a want of full success in their use in exploring the rectum. The sphincter ani is a powerful muscle, and resists their

dilating power except under the profound influence of chloroform or ether; and the use of a speculum ani, except under the anæsthetic influence, generally occasions a great deal of pain. Anæsthesia, then, is a most valuable aid in rectal exploration. The speculum that I have found most useful is a modification of Sims's speculum vaginae—the modification being a notch to receive the external sphincter when the instrument is in position, which aids materially in keeping it steadily in place* (Fig. 26). The boxwood instrument (Fig. 27), when the speculum has been



FIG. 26.



FIG. 27.

introduced and committed to an assistant, enables the surgeon to dilate the sphincter more completely from the side opposite the speculum. The shape of this curved spatula prevents the surgeon's hand from obstructing his line of sight as the instruments are

* This speculum was first described in the *Trans. N. Y. Acad. Med.*, vol ii, p. 181.

swept around so as to bring all sides of the bowel in view. It may be replaced by a bent loop of stout wire; and the speculum I have figured by the ordinary Sims's speculum. Previous stretching of the sphincter greatly facilitates the use of these instruments.

A whalebone instrument, terminating in a spherical or olive-shaped ivory ball, constituting a sort of bulbous bougie, such as is used in examining the urethra, has been recommended for rectal exploration. But a better contrivance than this is a hollow, flexible rectum-tube, terminating in a ball with an orifice at its summit. By attaching an India-rubber injecting apparatus to the other end of this tube, so as to be able to throw a stream of tepid water or flaxseed-tea against any fold of the bowel by which its progress might be impeded as it is gently pushed onward, you have an excellent apparatus, both for exploration beyond the reach of the eye and for administering an enema effectively under circumstances of obstruction. In exploring for stricture beyond the reach of the finger, I have more recently employed one of the heavy caoutchouc rectum-tubes lately recommended by Surgeon-General Wales of the navy.* This surgeon uses his tubes also as *dilators*, distending them with water by means of an injecting apparatus. I have already spoken of the inef-

* "A New Rectal Dilator and Explorer," etc., by Philip S. Wales, M. D., Medical Inspector, U. S. N., New York *Med. Record*, vol. xii, 1877. In the London *Med. Record* for May 15, 1879, a still later device for the discovery of stricture is described and pictured, in which a hood of thin India-rubber is drawn over the head of the heavier tube and secured, and this, after being greased, is introduced up the bowel, distended with water by means of a syringe, and then slowly withdrawn.

ficiency of dilatation as a permanent cure for stricture, and of the uncertainty of all hydraulic devices for this purpose, inasmuch as we have no means of measuring the force employed. But, as an exploring instrument, when one of these tubes has been closed at one end so that it can be distended into a spherical ball one or two inches in diameter, *after it has been introduced* as far as possible into the bowel, and then slowly withdrawn, it can not fail to furnish good evidence as to the presence or absence of stricture. Inflation by air answers just as well for this purpose as distention by water, and the former is more convenient. An ordinary injecting-bag with a stop-cock and conical nozzle, the latter being inserted into the open end of the tube, has been found efficient.

It is well to remember that, in the normal condition of the bowel, a rectum-tube can not often be passed beyond ten to twelve inches from the anus—in many cases, not so far.

Where there is any suspicion of cancerous degeneration, the greatest gentleness in manipulation must be employed, for instances are not wanting in which tubes and bougies have been thrust through the softened wall of the gut, rapidly causing fatal peritonitis.*

The position in which the patient is placed for examination is also a circumstance of great importance in facilitating a view of the interior of the bowel. I was early impressed with the ingenuity and great value of Marion Sims's mode of placing his

* Mr. Curling says: "In a hospital case of cancerous stricture, rather high up, in which I directed the tube to be employed as occasion required, the dresser, on the third or fourth time of using it, unfortunately passed the tube through the soft carcinomatous mass, and penetrated the abdomen, causing the patient's death in twelve hours."

patient in his operations upon the vagina, and I have employed the same position with great advantage in exploring the rectum. With a patient under the full influence of an anæsthetic, on a table of proper height and in a good light, the trunk of the body in the prone position, with outspread arms, and the hips properly elevated so that the intestines gravitate toward the diaphragm, I have often, by the aid of Sims's speculum vaginæ alone, obtained an excellent view of the whole internal surface of the rectum as high up as its termination in the sigmoid flexure of the colon. The chair employed for uterine examinations, where the pelvis can be elevated or depressed at will, is admirably adapted for this purpose; for thus, by a proper management of the light, its rays may be thrown to the bottom of the cavity presented by the bowel, and the presence of air, pumped in and out by the diaphragm, as the intestines lie in contact with this muscle, keeps the walls of the gut distended and in full view.

Here, then, in anæsthesia and position, according to my experience, we have the means at our command for thorough exploration of the rectum; and with the necessary tact in their employment, they will be found, I believe, entirely adequate to the purpose. As to the introduction of the hand into the lower bowel as a means of exploration, I have already spoken favorably of it, and illustrated its efficiency by cases. With a small hand, and gentleness in manipulation, the danger attending this proceeding is very slight compared with the very positive advantage to be secured by it in cases of doubtful diagnosis.

Of course, such thorough exploration is not re-

quired in the majority of cases. For affections of the anus in the male, I have found it most convenient to place the patient upon a sofa in a good light, on his back, with the head on the same level as the pelvis, and then to tell him to lift the legs to a right angle with the body and clasp the hands behind the thighs. In this position, which is naturally and readily assumed, the body is comfortably balanced, and no fatigue or muscular effort required. Then, by separating the buttocks and gently forcing asunder the margins of the anal orifice by means of the thumbs, you will get a good view of the radiating plaits and of the festooned line of junction of skin and mucous membrane, and possibly recognize the lower margin of an irritable ulcer; or, by urging the patient gently and repeatedly to "bear down, as though at stool," you may gain sufficient relaxation of the levatores and sphincter muscles to secure, perhaps, the protrusion of a hæmorrhoidal tumor. You will be able always, in this way, to form an opinion as to the condition of the mucous membrane of the lower end of the rectum, to recognize the presence of an eczema, or, perhaps, the orifice of a fistula.

Then there is a great deal to be learned by the touch. To use the finger with advantage for this purpose, employ some mild ointment very freely; common sweet-oil is not sufficiently lubricating, and the complaints of a patient seriously interfere with the object of your exploration. By directing the finger from behind forward, you will gain on the antero-posterior curve of the bowel, and, by pushing with force and burying your knuckle in the perinæum, you may reach a distance of four or five inches

from the anus. Amussat adopted the expedient of getting a friend to push his elbow, and thus gained a little more. If, while you are reaching thus as far as possible, you encourage your patient to bear down forcibly against your finger, as though at stool, you might possibly bring down in contact with its extremity a stricture, or tumor, or altered surface, situated as far as six inches from the orifice of the gut. You may feel a polypus, distinguishing it by its narrow pedicle and its tendency to elude the finger; but you can not with certainty recognize a hæmorrhoidal tumor by the touch. In its ordinary soft, spongy condition, when not strangulated by the sphincter, you will hardly be able to distinguish a hæmorrhoidal tumor from the soft surface of the bowel which, just within the anus, is puckered more or less into folds; but, on the other hand, when indurated by repeated attacks of inflammation, it may give you the idea of a fibrous tumor, or even of something worse. By the touch you may be able to detect the orifice of a fistula within the grasp of the sphincter or just above, where, in fact, it is most generally to be found, and it will give you the sensation of a little softish, warty elevation. Of course, a foreign body, or impacted fæces, or a stricture, or an altered surface near the anus, are all readily recognized; but, when it is a question of a tumor outside of the rectum, or supposed perhaps to be imbedded in its walls, remember the fact that the uterus and the prostate are both readily tangible from this quarter. In case of any difficulty in distinguishing either of these organs from a tumor, the introduction of a uterine or of a urethral sound will settle the question. A stricture

which is not sufficiently tight to embrace the finger like a ring is not always easily recognizable, although situated near the anus, especially when there is no considerable thickening or hardness of the part involved which is appreciable by the finger. In the case of a lady, whom I saw recently with my friend Dr. Emmet, I had satisfied myself, by ocular inspection and by the touch, of the existence of a recto-vaginal fistula just at the sphincter, and of an unnatural sense of heat in the rectum, but of nothing more. As these lesions did not fully explain the symptoms, I solicited a fuller exploration. When under the influence of ether, and in proper position, Sims's speculum was introduced and gently drawn toward the coccyx, and now a distinct ring with a sharp edge started out from the vaginal aspect of the bowel about two inches above the sphincter. The speculum was carried around on the opposite side, so as to press the wall of the rectum against the vagina, and immediately the sharp-edged fold became equally visible, projecting from its coccygeal aspect. To the finger in contact with this thin edge it conveyed the impression of a linear stricture, but, when the speculum was withdrawn, the finger no longer received this impression, nor could it recognize anything abnormal save the sensation of heat. There was unnatural redness as well as increased sensibility and heat, and more or less purulent secretion, and I therefore felt justified in the diagnosis of chronic inflammation of the rectum, with commencing stricture.

I have now pretty much exhausted the time at our disposal for the consideration of diseases of the rectum, and shall only mention summarily two or

three other points which seem to me to possess practical importance.

The mode of exploration I have just described will enable you with a good deal of certainty to detect the lesion in most cases of so-called *neuralgia* of the anus, but you may, possibly, encounter an example of pure *nervous pain* for which there is no local cause. In such case you must seek for its explanation in sympathetic or reflex irritation which has its origin in some other organ—the uterus, the ovaries, the prostatic sexual center in the male, or, perhaps, in the brain; and you will find your remedy in searching for the remote cause of the affection, and in such measures as tend to improve the health of the whole organism. Hysteria will present itself not unfrequently as the cause of this as well as of many other local neuralgic complaints; and also the condition called by some oxaluria—which is simply a phase of nervous gout, in which the blood is poisoned by badly assimilated food and drink. In cases of this kind do not waste your time upon local remedies. These are only the resources of the routinist and of him who prescribes for symptoms. The true physician is not satisfied until he has reached the causes of symptoms, and unmasked the real pathology of the disease. Employ, therefore, all your ability and tact in finding out and removing the causes of morbid nervous phenomena, and in correcting the faulty habits of life, which in the great majority of such cases have brought about the condition of health of which the so-called neuralgic pain is only a symptom.

And now I have but a few words to add concerning the *hygiene* of the lower bowel—that is, how to

preserve the health of this part of the body, and to avoid the diseases I have been describing. This is a subject in regard to which great indifference, even ignorance, prevails. You must have remarked how many of these complaints seem to have had their origin in carelessness and neglect, through ignorance. The individual who sits straining to get rid of the contents of his large bowel is not aware of the damage he is doing to the parts which he is subjecting to violence, and how surely he is courting prolapsus or piles, if not abscess or fistula. In disregarding the calls of nature, few persons recognize the danger they incur of loss of expulsive power from over-distention and consequent costiveness from atony, of inflammation, stricture, and abscess.

Let us glance for a moment at what anatomy teaches us of this.

The muscular coat of the rectum consists of a layer of internal fibers which circle around the gut, and a layer of external fibers which run in the direction of its length. The circular fibers grow larger and more powerful as they approach the lower end of the bowel, and just above the external sphincter muscle they are collected into a mass of some volume to which the name of *internal sphincter* is given. A large proportion of the external longitudinal fibers when they reach this ring double around its lower border, passing upward and inward to seek an insertion into the fibrous substratum of the mucous membrane of the gut, where they are firmly implanted. From this arrangement it results that, when in the act of defecation these longitudinal fibers contract, they tend first to draw down and then to evert the

mucous membrane of the lower end of the rectum—just what we see happen in the horse. When the evacuation of the contents of the bowel takes place naturally, this protrusion is promptly retracted by the action of the *levator*es and the natural contractility of the parts; but, when the evacuation is difficult or impossible, and the effort is prolonged or frequently repeated, the protruded mucous membrane becomes congested and swollen, and is retracted with more difficulty—perhaps a portion of it remains outside, and then the tumid and tender protrusion leads to the announcement on the part of the patient that he has “an attack of the piles.”

Now, this is only a part of the system of complex and delicate machinery by which Nature provides for the perfect accomplishment of this most important function—a function which we can not regard as ignoble, since the great Architect of the Universe has made it a condition of life and health in all animated beings. It is our duty, then, to teach those who intrust their health to us how to care for themselves intelligently in this matter, and thus to avoid pain and sickness; for preventive medicine takes rank before curative medicine, inasmuch as it requires a wider scope of knowledge and involves a greater exercise of power. The regular performance of this function is, then, one of the primary conditions of physical well-being, and its derangement is recognized as one of the first evidences of a departure from perfect health. Its periodical fulfillment should be insisted upon, for periodicity is one of Nature’s favorite habits; and this should be solicited with gentleness, and the danger of straining or violence

HYGIENE OF THE LOWER BOWEL.

should be inculcated even from earliest childhood. If the evacuation can not be accomplished by moderate effort, then the cause of this unnatural phenomenon must be sought for and removed; for no person is "naturally costive," as the popular belief and mode of expression would seem to imply. Meanwhile the morbid condition must not be allowed to persist and become habitual, but it is to be palliated by the simplest and gentlest means by which the end can be accomplished. Mild laxatives, dinner-pills, and enemata are the palliative remedies; but judgment and regularity in the selection and use of food, and, above all, the correction of evil habits of life—without which, costiveness, except as the result of obvious disease, does not exist—are the real means of cure, which should always be preferred to drugs. As to *special therapeutics*, there are certain substances which seem to exercise a direct influence upon the rectum. Thus, aloes stimulates the desire to go to stool by a certain irritating effect upon the mucous membrane of the gut, and this quality gives the drug great value in the frequent cases where the sensibility of the bowel is sluggish, but, on the other hand, contraindicates its employment whenever an over-sensitive or inflammatory condition is present. For this reason aloes is the principal ingredient in all so-called "dinner-pills." My friend and colleague Prof. Fordyce Barker has ably shown by his experience that the popular prejudice against aloes as causing "piles" is unfounded.* Sulphur has a certain value as the most unirritating of laxatives. The sedative influence of the sulphuretted hydrogen extricated during its passage

* *The Puerperal Diseases*, etc., New York, 1874, p. 32.

through the intestinal canal possibly explains this quality. Hence it is employed, alone or in combination with other mild and efficient laxatives, when opening medicine is required at the same time that the rectum is irritable or inflamed. Sulphur and confection of senna constitute the "lenitive electuary" formerly so much in use. Other drugs, such as cubebæ and black pepper, have the singular quality of leaving a cooling sensation in the rectum after having passed through it, and have a certain value in this way. Ward's paste—the *confectio piperis nigri* of the pharmacopœia, praised by Sir Benjamin Brodie—has had a somewhat exaggerated reputation as a remedy for piles. Copaiba, also, possesses some specific virtue in diminishing inflammation of the rectal mucous membrane, and is worthy of careful trial in those cases of chronic inflammation which precede and accompany stricture. In atony and the paresis which attends some injuries and affections of the spinal cord, electricity and cold both possess a considerable degree of power in stimulating the contractility of the muscular coat of the rectum, and the latter, in the form of the cold enema, is especially useful in its influence upon the walls of weak and over-distended hæmorrhoidal vessels.

And now I must bring my lectures on the diseases of the lower bowel to a close. I have endeavored to make them suggestive rather than exhaustive, leaving the application of the principles I have laid down and the further details of practice to the clinical demonstrations you will receive in your daily visits to the Bellevue and Charity hospitals.

INDEX.

- Abdominal section for intussusception, 92.
- Abscess, 128-155; anal abscesses divided into three varieties, 128; first variety: marginal abscesses, 129-131; second variety: ischio-rectal abscesses, 132; causes, 132, 133 *et seq.*; "idiopathic" and "traumatic" abscesses, 135; stercoral abscesses, *ib.*; rupture of small blood-vessel most common origin of abscess, 137; stricture of rectum as a cause of abscess, 138, 139; abscesses complicating fistulae in ano, 140; various forms of abscess which may "point" near anus, *ib.*; symptoms of second variety of abscess, 141; remedies, *ib.*; cure does not always follow spontaneous discharge, 142; formation of blind internal fistula, *ib.*; grave form of abscess originating deep in ischio-rectal fossa, 143; its cause and progress, *ib.*; early and free opening necessary, 144; abscesses of third class: originating higher up in the pelvis than ischio-rectal fossa, 145, 146; abscess in walls of the rectum, 147; characteristic features of rectal abscesses, 148; prognosis, 149; rules for surgical practice, *ib.*; value of anaesthesia, 150; causes which delay healing, 150-152; means of inducing cicatrization, 153, 154; necessity of general surgical knowledge, 155.
- Abscess, marginal, of the anus, 14.
- Actual cautery in prolapsus ani, 81.
- Adenoma of the rectum, 100.
- Adenoma mistaken for cancer, 101.
- Affections which simulate stricture, 127.
- After-treatment of internal piles, 48.
- Allingham's ligature instrument for fistula in ano, 179.
- Allingham, Mr., on the application of fuming nitric acid to hæmorrhoids, 38 (note).
- Anal abscesses. *See* Abscess.
- Anatomy of the rectum, 400.
- Andrews, Professor E., on the treatment of piles with carbolic acid, 42 (note).
- Ano-rectal imperforation, 367.
- Ano-rectal syphiloma, 121, 244; 283 (note).
- Anus, eczema of, 4.
- Anus, gummatous lumps at, 20.
- Anus, imperforate, 363 *et seq.*
- Anus, itching of, 2, 7, 8, 10.
- Anus, parasitic plants at, 6, 7.
- Anus, prolapse of the. *See* Prolapsus ani.
- Anus, syphilitic patches at, 20.
- Anus, warty growths at, 20.
- Amputation of invaginated intestine, 69 (note), 91.
- Amputation of lower end of rectum for stricture, 318.
- Amussat's operation for the radical cure of internal piles, 42 (note).
- Amussat's operation for ano-rectal imperforation, 372.
- Amylaceous degeneration, 174.
- Artificial anus, 352, 353.
- Artificial anus, prolapse through, 94.
- Ascarides, itching from, Dr. Koreef's cure for, 9 (note).
- Ashhurst, Dr. J., Jr., cure of complete prolapse by, by application of nitric acid, 84 (note).
- Atony from stretching of sphincter ani, 214.
- Atony of the rectum, 389; treatment, 390.
- Atresia, congenital, of the rectum, 262.
- Auto-inoculation from venereal sores, 236.
- Autopsies of fatal cases of stricture, 272, 273 (note).

Beer-glass in rectum, 386.

Benign stricture of the rectum, 258-321; various forms of stricture, 258; situation, 259; etiology, 260, 261; preventive treatment, 261; congenital atresia, 262; congenital stricture not common, 263; characterized by constipation, *ib.*; traumatism not usually productive of stricture, 264; contusions and burns followed by contraction, 265; bruises received during parturition as causes of stricture, *ib.*; acids and actual cautery as causes, 265, 266; other attributed causes, 266; case of stricture resulting from pelvic cellulitis, 267; hypertrophy of colon, *ib.*; closure of rectum by fibroma of uterus, 268; threatened stoppage by enchondroma of pelvis, *ib.*; chancre as a cause of stricture, *ib.*; syphilis as a cause of rectal stricture, 268, 269; classification of benign strictures, 270; morbid anatomy and histology of benign strictures, 270-272; peritoneal adhesions, *ib.*; symptoms of stricture, 273 *et seq.*; character of feces, 278; involuntary escape of mucus and pus, 279; the stricture nearly always within reach of the finger, 280; no force to be used in digital examinations, *ib.*; abscess and fistula as complications, 281; fecal matter in urine should lead to search for stricture, 282; recto-vesical abscess from chicken-bone, *ib.*; peri-rectal abscess from thrombosis, 282; peri-rectal cellulitis, 283; condylomata, *ib.*; death from sudden and persistent occlusion of rectum by foreign bodies, 284; the progress and duration of benign stricture may vary within wide limits, *ib.*; prognosis, 285; occlusion of rectum in a pregnant woman, 286; diagnosis of benign stricture, *ib.*; imaginary strictures, 287; improved means of exploration, 288; flexible caoutchouc rectum tubes, *ib.*; instructive cases, 289; mistakes in diagnosis, 290, 291; treatment, palliative and radical, 292; dietetic treatment, 293; bougies, 294-300; sponge tent and laminaria for dilatation, 301; Tuffnell's tubular rectal bougies, 302; Nélaton's dilator, *ib.*; bursting of bowel by hydraulic pressure, 303; multiple incision or "nicking," *ib.*; electroly-

sis, 304; caustics to be avoided, *ib.*; mercury and iodine, 305; colotomy, 306-309; radical cure of benign stricture, 310; complete longitudinal division of stricture, *ib.*; Reybard's operation, *ib.*; Luke's method of avoiding hæmorrhage, 311; Humphry's cases, 311, 312; complete vertical section, 313; Verneuil's cases, *ib.*; hæmorrhage not to be feared, 314; case cured by the author by longitudinal section, 315, 316; the cautery knife, 317; amputation or excision of lower end of rectum, 318; Holmes's case, 319; other cases, 320; plastic operation, 321.

Benign tumors of the rectum, 95-127.

Bleeding from the bowels, 14 (note).

Blind external fistula, 131, 192.

Blind internal fistula, 142, 170, 192.

Boring through rectal cancer, 349.

Bottle in rectum, 359 (note).

Bougies, 294-296.

Bowels, bleeding from, 14 (note).

Boyer's erroneous views on prolapsus ani, 60 (note).

Boyer's original operation for the cure of fissure, 205.

Bridge, Dr.—his case of lumbar colotomy for rectal ulceration and stricture, 239, 240 (note).

Brinton on injections of water and air for reduction of intussusception, 89 (note).

Broca's case of peritonitis after removal of polypus by écraseur, 117, 118.

Brodie, Sir B. C., on the situation of rectal strictures, 259, 260 (note).

Bruising during parturition as a cause of stricture, 265.

Burns as causes of stricture, 265.

Bursting of bowel by hydraulic pressure, 303.

Cancer, 322-362; when it invades rectum, tends to obstruct the caliber of the canal, 323; tendency to ulceration and molecular gangrene, accompanied by watery and bloody discharges, *ib.*; symptoms, 324; digital exploration, 325; cancer of rectum may occur in one of three forms—epithelioma, malignant sarcoma, or scirrhous, 326; situation and growth of epithelioma, 327, 328; characteristic features, 329, 330; case of cancer of the rectum, with operation, illustrated with microscopic sections, 330-333

- (note); malignant sarcoma, 333; its point of origin, growth, and consistence, 334; carcinoma, 335; diagnosis of cancer of the rectum, 336 *et seq.*; diagnostic signs common to other diseases, and sources of error, 337; death from unsuspected cancer of bowel, 338; means of distinguishing between cancer and benign, syphilitic, and other strictures, 339; pain in cancer of rectum usually constant and characteristic, 341; peculiar odor of cancerous discharge, 342; progress of the disease, *ib.*; prognosis, 343; the disease has sometimes been permanently cured, 344; palliative measures, 345; diet, etc., 346; laxative medicines, 347; means of relieving pain and difficulty in defecation, 348; temporary relief by removal of fungous growths from rectum, 349; boring through cancerous mass, *ib.*; "scooping," *ib.*; complete vertical section of lower end of bowel, 350; colotomy, 351; best position for artificial anus, 352, 353; remedies (?) for cancer, 354; Chian turpentine, *ib.*; thuja occidentalis, *ib.*; narcotics, *ib.*; question of cure from surgical treatment, 355, 356; when cancer may properly be treated by extirpation, 357; surgeons who have practiced extirpation, 358, 359; details of the operation and its consequences, 360; after-treatment, 361, 362.
- Cancer as a cause of rectal ulcers, 248.
- Cancer of the rectum. *See* Cancer.
- Caoutchouc ligature, 179.
- Carcinoma, 335.
- Caries, fistulae due to, 171, 172.
- Cartilaginous tumor, 126.
- Causes of rectal ulcer, 223.
- Chancre in the rectum, 242.
- Chaneroid, 235.
- Chaneroid as a cause of stricture, 268.
- Chaneroid ulcer of the anus or rectum, 237.
- Chian turpentine in cancer, 354.
- Chicken-bone, recto-vesical abscess from, 282.
- Childbirth, bruising in, as a cause of stricture, 265.
- Childbirth, bruising of the rectum during, as a cause of ulcer, 224, 225.
- Children, prolapsus ani in, 55.
- Choate, Dr. D.—case of sloughing of invaginated portion of colon, 66 (note).
- Chronic eczema of the anus, 4; yellow wash for, *ib.*; compound tincture of iodine for, *ib.*; nitrate of silver for, *ib.*; carbolic acid for, *ib.*; liquor potassæ for, *ib.*; itching in, remedies for, 5; diagnosis of, 6; Fowler's solution in, *ib.*; Turkish bath, *ib.*
- Cicatrization as a cause of stricture, 261.
- Circumscribed polyadenomata, 103.
- Closure of rectum by fibroma of uterus, 268.
- Coccyx, bones of, in stercoreaceous abscess, 232 (note).
- Coccyx, exsection of, 373.
- Colloid cancer, 328.
- Colloid degeneration, 328.
- Colotomy for cancer, 351.
- Colotomy for stricture, 306–309.
- Colotomy for ulceration of rectum, 256, 257.
- Colotomy, lumbar, for rectal ulceration and stricture, 239, 240 (note).
- Colles, Abraham—his mode of "snipping out" internal piles, 41 (note).
- Complete longitudinal section of stricture, 311.
- Complete prolapse of the rectum, 58 *et seq.*
- Complete vertical section for stricture, 313.
- Complete vertical section of lower end of bowel for cancer, 350.
- Concretions in rectum, 382, 383 (note).
- Condylomata, 20, 121, 283.
- Congenital atresia of the rectum, 262.
- Congenital contraction of the anus, 206.
- Congenital cysts near anus, 125.
- Congenital malformation, 363 *et seq.*; four varieties, 364; death from peritonitis and septicæmia, 365; abstracts of cases, *ib.*; crucial incision for first variety of imperforate anus, 366; exploration for rectum in second and third varieties, 366, 367; failure of union of buds of "hypoblast" and "epiblast," constituting fourth variety, 367, 368; necessity of early examining new-born children when bowels do not move, 368; danger of delay of operation for relief, 369; remedial measures, 370; inadequacy of simple incisions, 371; views of Sir Benjamin Brodie and of Amussat, *ib.*; Amussat's operation, 372; exsection of the coccyx, 373; exploration by trocar unjustifiable, *ib.*; opening of sigmoid flexure for artificial anus, 374; Littre's suggestion, *ib.*; Calli-

- sen's suggestion, 375; Dubois's case, ib.; inguinal colotomy by various surgeons, 376; Mr. Curling's statistics, 377; reason for the inguinal operation, ib.; case of married lady with children, etc., 378; rule of procedure in ano-rectal imperforation, 378, 379.
- Congenital recto-vaginal communication, 365 (note).
- Contagious venereal ulcer, 235.
- Contusions and burns as causes of stricture, 265.
- Cornil on the pathological histology of syphilitic strictures, 271 (note).
- Cripps on cylindrical epithelioma, 333 (note).
- Cruveilhier's case of rectal stricture with excessive faecal accumulations, 276, 277 (note).
- Cruveilhier on the presence of the peritoneal sac in prolapsus ani, 61 (note).
- Curling on inguinal colotomy for imperforate rectum, 377.
- Cutting operations for the relief of prolapsus ani, 85 *et seq.*
- Cylindrical-celled epithelioma, 329 *et seq.*
- Cylindroma of the rectum, 217.
- Cysts near anus, 125.
- Dermoid cysts, 126.
- Descent of the lower bowel. *See* Prolapsus ani.
- Desprès on syphilitic stricture of the rectum, 238, 239 (note).
- Diagnosis, importance of accurate, in rectal diseases, 391.
- Diaphragmatic stricture of the rectum, 258.
- Diarrhoea produced by rectal ulcer, 226.
- Dieffenbach's mode of applying actual cautery to prolapse, 82.
- Dieffenbach's operation for prolapsus ani, 85.
- Digital exploration, 396, 397.
- Dilatation of sphincter ani for cure of fissure, 206 *et seq.*
- Dilatation of stricture by bougies, 296 *et seq.*
- Dilators, 393.
- Distinguishing characteristics of prolapse of the rectum, 57.
- Diverticula, 159, 171.
- Dupuytren's case of excision of internal hæmorrhoids, 40 (note).
- Dupuytren's operation for prolapsus ani, 85.
- Dysenteric stricture, 227.
- Dysenteric ulcer of the rectum, 226.
- Eczema marginatum, 7.
- Eczema of the anus, 4.
- Electrolysis in stricture, 304.
- Enchondroma of pelvis, 268.
- Epithelioma, 327.
- Ergot and ergotin, subcutaneous injection of, in prolapsus ani, 78 (note).
- Erythema, 3.
- Escharotics as causes of stricture, 265.
- Esmarch's mode of applying actual cautery to prolapse, 82.
- Evidence of syphilitic diathesis, 247.
- Excision of lower end of rectum for stricture, 318.
- Exploration for stricture, 288.
- Explorative laparotomy, 87.
- Exploring instruments, 393.
- Exsection of the coccyx, 373.
- External hæmorrhoids, 15-21.
- Extirpation of cancer, 357.
- Fæcal impaction, 380-384; symptoms, 381-382; uselessness of cathartic medicines, 383; "scooping out," 384.
- Fæcal matter in urine, 282.
- Fagge, Dr. Hilton—case of intussusception of colon, 67 (note).
- Falling of the lower bowel. *See* Prolapsus ani.
- Fascicular spasm of external sphincter muscle, 231.
- Fatality of invaginated prolapse, 67.
- Fatal use of bougies, 297.
- Fatty tumors, 124.
- Ferrand, M.—cure of prolapsus ani by subcutaneous injection of ergotin, 78 (note).
- Fibroma of the rectum, 104.
- Fissure, or irritable ulcer of the anus, 197-220; intolerable suffering from, 197; seat of the disease, ib.; occurs in both sexes, 198; mode of recognition, 199; duration of pain after defecation, ib.; character of pain, 200; an illustrative case, 202, 203; cause of the severe pain, 204; why division of sphincter cures the disease, ib.; forcible dilatation of sphincter ani, 206 *et seq.*; how the operation cures, 209; temporary paralysis produced by the stretching, ib.; if knife is used, entire division of sphincter is unnecessary 210; misuse of the term "neuralgia" in this disease, 211; the symptoms

- sometimes attributed to "spasmodic contraction of the anus," 212; value of forcible dilatation, 213; the atony produced by stretching favorable to healing of ulcer, 214; the diagnosis of fissure not easy or certain without anæsthesia, 215; fissure sometimes mistaken for uterine trouble, 216, 217; prognosis, 217; treatment of cracks in nursing infants and children, 218; spontaneous cure of fissure rare, 219; uterine complications, 220.
- Fistulæ** from caries of bone, 171, 172.
- Fistula in ano**, 156-196; characteristic features, 157; division of fistulæ into "complete" and "incomplete," 158; tissues which they affect, 159; origin of fistulæ, *ib.*; pathology, 160 *et seq.*; fistulæ mostly tortuous, 163; the typical form has both an external and an internal orifice, 164; case of fistula with numerous openings, 165; symptoms and diagnosis, 167; pain not usually severe, *ib.*; method of examination, 168; sub-variety of blind internal fistula, 170; significance of the discharges, 171; discharges due to caries, 172; prognosis, 174; danger from persistent purulent discharge, *ib.*; coexisting diseases which would render surgical interference injudicious, 176; prevention of the disease, 177; treatment, 178; complete opening of sinus with knife, *ib.*; ligature, 179; cure by ligature slow in the case of a branching fistula, 180; advantages of the ligature, *ib.*; necessity for anæsthetizing before operating, *ib.*; mode of operating, 182; use of Paquelin's thermo-cautery or red-hot knife where hæmorrhage is feared, *ib.*; undermined integument, 183; procedure in case of many openings, etc., 184, 185; caution in use of knife, 185; free incisions necessary in old fistulæ, 187; dressing of the wound, 188; evacuation of bowels to be prevented several days, 189; mode of healing, *ib.*; loss of power of sphincter ani in case of division, 191; blind internal and external fistulæ, 192; horseshoe fistula, 194; operation for, *ib.*; useful local stimulants in slow healing, 195; change of air and sea-voyage, *ib.*; treatment of deep fistulæ, *ib.*; Gerdy's instrument, *ib.*; fistula due to dead bone, 196.
- Flexible caoutchouc rectum tubes**, 258.
- Follicles of Lieberkuhn**, 98.
- Follicular ulcers**, 232 (note).
- Forcible dilatation of sphincter ani** for cure of fissure, 206 *et seq.*
- Foreign bodies in lower bowel**, 384-385; substances introduced accidentally and maliciously, 385; danger to life, 386; diagnosis and symptoms, *ib.*; Mr. Thomas's case: removal of piece of walking-stick, 387; operations, 388.
- Fournier's "ano-rectal syphiloma,"** 121, 244.
- Frequency of rectal stricture in women**, 237.
- Gangrene of invaginated intestine**, 66 (note).
- Gastrotomy**, 93.
- Gerdy's instrument for deep fistulæ**, 195.
- Glass bottle in rectum**, 389 (note).
- Gosselin on syphilitic stricture of the rectum**, 238 (note).
- Granular papilloma**, 108.
- Granulation tissue in stricture**, 271.
- Grave form of rectal abscess**, 143.
- Gummatous lumps at the anus**, 20.
- Gummy deposits and ulcerations in rectum**, 243.
- Hæmorrhoidal plexus**, 11.
- Hæmorrhoids**, 11 *et seq.*; external, 14 *et seq.*; treatment of, 17-19; diagnosis of, 20; prevention of, 20, 21.
- Hæmorrhoids, external.** See **Hæmorrhoids**.
- Hæmorrhoids, internal**, 22-53; their liability to hæmorrhage, 22; prolapse of, at stool, 23; weakening of sphincter ani muscle by repeated prolapses, 24; diagnosis of strangulated internal piles, 26, 27; case of unrelieved strangulation, 28; causes of internal piles, 29-30; pathological peculiarities of, 31; gouty diathesis a predisposing cause, 32; sphincter ani liable to become atrophied in elderly persons, 33; pain not always a prominent symptom, *ib.*; loss of blood a cardinal symptom, 34; its persistency, *ib.*; diagnostic points, 35; nitric acid and injections of cold water as remedies, 36-39; carbolic acid, 39; subsulphate of

- iron suppositories, *ib.*; thermo-cautery of Paquelin, *ib.*; strangulation by ligature, 40; use of knife or scissors dangerous, *ib.*; actual cautery, 41; injection of piles with carbolic acid, 42; injection with subsulphate of iron, 43; injection with ergot, *ib.*; Chassaignac's écraseur, *ib.*; ligatures of silk, gut, or thread, *ib.*; forcible dilatation of sphincter ani muscle, 43-45; application of ligature, 45; details of the operation, 46-48; after-treatment, 48-49; satisfactory results, 50; relapses after operation rare, 51; remedies that have proved beneficial in cases of persistent hæmorrhage, 52-53.
- Hamilton's case of reduction of prolapsus ani, 74 (note).
- Hard fibrous polypus, 103 *et seq.*
- Herpes, 3, 4.
- Histological anatomy of papilloma, 120.
- Holmes, T.—removal of invaginated intestine, 69 (note).
- Horse-shoe fistula, 194.
- Houston, Dr., "On the use of Nitric Acid as an Escharotic in Certain Forms of Hemorrhoidal Affections," 37 (note).
- Humphry's cases of section of stricture, 311, 312.
- Hutchinson's case of invagination cured by laparotomy, 92.
- Hutchinson's statistics on invagination of the bowels, 66 (note).
- Hygiene of the lower bowel, 399-403.
- Hypertrophy of colon, 267.
- Imaginary rectal strictures, 287.
- Impaction of fæces, 380-384.
- Imperforate rectum, 363, 367.
- Inanition as a cause of ulceration, 232.
- Incontinence of fæces, 191.
- Inguinal colotomy, 376-379.
- Inoculation of anal fissures from vaginal chancreoids, 236.
- Insufficiency of sphincter ani, 191.
- Internal hæmorrhoids. *See* Hæmorrhoids, internal.
- Internal rectal tumors, 53.
- Intussusception of large intestine, 88 *et seq.*
- Invagination of large intestine, 88 *et seq.*
- Irreducible prolapsus ani and intussusception, 65, 66 (note).
- Irritable ulcer of the anus. *See* Fissure, etc.
- Ischio-rectal abscesses, 132.
- Itching of the anus, 2, 7, 8, 10.
- Jobert's mode of excising internal piles, 40 (note).
- Jones, Mr. Sidney—case of invagination of intestine in a child, 67 (note).
- Kluykaens, Prof., cure of case of prolapse by, by actual cautery, 81.
- Kneading of sphincter ani for fissure, 206.
- Koreef's (Dr.) cure for pruritus ani from ascarides, 9 (note).
- Krönlein's case of death from subcutaneous injection of strychnia for prolapse, 78.
- Labor, bruising during, as a cause of stricture, 265.
- Labor, bruising from, as a cause of rectal ulcer, 224, 225.
- Laminaria and sponge tent for dilating strictures, 301.
- Laparotomy, 87, 92.
- Laxatives, 402, 403.
- Lec, Mr. Henry, on the treatment of hæmorrhoidal tumors with nitric acid and other remedies, 37, 38 (note).
- Left-sided anus, 366.
- Lieberkuhn, follicles of, 98.
- Ligature for fistula in ano, 179.
- Lipoma of ischio-rectal fossa, 124.
- Longitudinal section of stricture, 311.
- Luke's method of avoiding hæmorrhage in section of stricture, 311.
- Lumbar colotomy for rectal ulceration and stricture, 239, 240 (note).
- Lupus exedens, 231.
- Maisonneuve's treatment of fissure, 206, 207 (note).
- Malignant sarcoma, 333.
- Malignant scrofulous ulceration, 233.
- Marginal abscess of the anus, 14, 129.
- Marot's case of ano-rectal syphiloma, 283 (note).
- Marsh, Mr. Howard, laparotomy on an infant by, 92.
- Medullary sarcoma, 334.
- Modes of preventing re-descent of the rectum, 77.
- Mollière's case of tubercular rectal ulcer, 231 (note).
- Mollière's experiments on the artificial production of prolapsus ani in cadavers, 80 (note).
- Monro's cases of irreducible prolapsus ani and intussusception, 65, 66 (note).

- Morbid anatomy and histology of benign strictures of the rectum, 270.
 Mott's (Valentine) operation for prolapsus ani, 86.
 Mucous membrane, prolapse of the, 57.
 Mucous patches at the anus, 243.
 Myoma, 104.
- Nature and causes of papillomatous growths, 119.
 Nélaton's dilator, 302.
 Neuralgia of the anus, 211, 399.
 Nitric acid, cauterization by, in internal hæmorrhoids, 35; in prolapsus ani, 84.
- Occlusion of rectum in a pregnant woman, 286.
 Old fistula, 187.
 Ovarian cyst occluding rectum, 268 (note).
 Owen's cases of ano-rectal imperforation, with operation, 379, 380 (note).
 Oxyuris vermicularis, 8, 9.
- Papillomata, 101.
 Paralyzing sphincter ani by forcible dilatation, 209.
 Parasitic plants at the anus, 6, 7.
 Parker's (Prof. Willard) cases of puncture for ano-rectal imperforation, 371 (note).
 Partial prolapse of the rectum, 57, 61, 71.
 Parturition, bruising during, as a cause of stricture, 265.
 Parturition, injuries during, as causing rectal ulcer, 224, 225.
 Pathological histology of syphilitic strictures, 271 (note).
 Paving-stone in rectum, 385.
 Pelvic cellulitis causing stricture, 267.
 Pelvic hæmatocele occluding rectum, 268 (note).
 Perforating ulcer, 233.
 Perforation of colon by a bougie, 298 (note).
 Peri-rectal abscess, 282.
 Peri-rectal cellulitis, 283.
 Peritoneal adhesions, 272.
 Peritonitis after removal of polypus by écraseur, 117, 118.
 Piles. *See* Hæmorrhoids.
 Plastic operation for rectal stricture, 321.
 Phagedæna, 233, 236.
 Pollock's new method of operating for internal piles, 48 (note).
 Polyadenomata, 103.
- Polypus and benign tumors of the rectum, 95-127; polypus of the rectum not a common disease, 95; Sir Astley Cooper's case, *ib.*; structure, *ib.*; bleeding from, 96; causes of polypus obscure, *ib.*; their tendency to be cast off, 97; characteristics distinguishing benign tumors from malignant or cancerous growths, 97 *et seq.*; microscopic structure of benign polypus, 98, 99; adenoma not easily distinguishable, histologically, from epithelioma, 100, 101; rectal adenomata seldom larger than a small plum, 102; their consistency, etc., *ib.*; their numbers, 102, 103; circumscribed polyadenomata, 103; hard and soft fibrous polypi, *ib.*; myxoma, 104; hard fibrous tumor mostly met with in adults, *ib.*; frequent coexistence of polypi with fissure or irritable ulcer, 106, 107; villous tumor of the rectum, 108; granular papilloma, *ib.*; terms applied to various shapes of polypi, 110; summary of anatomical characteristics, *ib.*; diagnosis, 111-113; prognosis, 114; treatment, 115 *et seq.*; precautions against hæmorrhage after removal, 115; removal by ligature, 116; by écraseur, *ib.*; division of sphincter, 117; sponge tampon, *ib.*; exploration of rectum under ether, *ib.*; non-polypous benign tumors, 118; nature and causes of papillomatous growths, 119; histological anatomy, 120; warts at anus seldom troublesome, 122; prognosis, *ib.*; palliatives for ulceration produced by traumatic irritation, 123; radical cure, *ib.*; fatty tumors, 124; lipoma in ischio-rectal fossa, *ib.*; lipomata in submucous coat of bowel, 125; cysts in neighborhood of anus mostly congenital, *ib.*; possibility of communication with cavity of sheath of spinal cord, *ib.*; exploratory puncture, 126; dermoid cyst, *ib.*; case of cartilaginous tumor, 126, 127.
- Pooley's case of inguinal colotomy for imperforate rectum, 376.
 Position for exploration, 395.
 Potential cauterium in prolapsus ani, 84.
 Procidentia recti. *See* Prolapsus ani.
 Prolapse of the lower bowel. *See* Prolapsus ani.
 Prolapse of the mucous membrane, 57, 59.

- Prolapse with invagination, 59 *et seq.*
 Prolapsus ani, 54-94; parts affected, 55; causes favoring its production, *etc.*, *ib.*; liable to increase in volume if unrelieved, 56; distinguishing characteristics, 57; prolapse of mucous membrane, *ib.*; prolapse of entire rectum with part of colon, 58; classified as "partial" and "complete" by American writers, *ib.*; French classification, 59; presence of portion of peritoneal sac and small intestines in complete prolapse, 60; three distinct varieties of complete prolapse, 62; first variety—absence of invagination, 62, 63; second variety—invagination of rectum within reach of finger, 63; third variety—invagination of colon or upper intestines within the rectum, 63, 64; tendency to a fatal issue of the last variety, 65; recently proved to be curable by a surgical operation, 66, 67; diagnosis of prolapsus ani, 68-71; treatment, 72; reduction by manipulation, 73, 74; local pressure to prevent re-descent, 75; tonics and astringent injections, 76, 77; influence of position during defecation, 77, 78; when a surgical operation is proper, 78; its object, 79; *modus operandi*, 80; actual cautery, 81 *et seq.*; potential cautery (nitric acid), 84; stricture produced by its injudicious use, *ib.*; electro-magnetism for atony, *etc.*, of sphincter ani, 85; cutting operations, 85, 86; cutting operations seldom advisable, *ib.*; after-treatment, *ib.*; explorative laparotomy, 87; treatment of third variety of complete prolapse, 88 *et seq.*; amputation seldom permissible, 91; prognosis grave, *ib.*; peritonitis rare, *ib.*; cases cured by laparotomy, 92; reasons for the operation, 93; not to be deferred too long, *ib.*; prolapse through artificial anus, 94.
 Prolapsus coli invaginatus ex ano, 88.
 Pruritus ani, 2, 7, 8, 10.
 Radical cure of stricture, 310.
 Recamier's treatment of fissure by kneading the sphincter ani muscle, 206 (note).
 Rectal abscesses. *See* Abscess.
 Rectal cancer. *See* Cancer.
 Rectal chancre, 242.
 Rectal fibroma, 104.
 Rectal stricture. *See* Benign stricture.
 Rectal tumors, 53. *See* Polypus, *etc.*
 Rectal ulcers. *See* Ulcer of the rectum.
 Recto-vaginal fecal discharge, from cancerous occlusion of rectum, 340, 341.
 Recto-vesical communication, 366.
 Recto-vesical fistula, 282.
 Rectotomy, 281 (note).
 Rectum, prolapse of the. *See* Prolapsus ani.
 Rectum, stricture of. *See* Benign stricture.
 Rectum, stricture of, caused by nitric acid, 84.
 Reduction of prolapsus ani by manipulation, 73, 74.
 Removal of complete prolapse of the rectum in a child, 60.
 Removal of a rectal protrusion, 65.
 Rhagades, 252.
 Ribes, researches of, on the mode of formation of internal piles, 30 (note).
 Robert's operation for prolapsus ani, 85.
 Rodent ulcer, 233.
 Rupture of colon caused by purgatives, 294 (note).
 Salt rheum, 8.
 Sands, Prof. H. B., laparotomy by, on an infant, for strangulated intestine, 92.
 Scirrhus, 335.
 Scooping fungous growth from rectum, 349.
 Scrofula as a cause of rectal ulcer, 228.
 Secondary fistulae, 159.
 Secondary syphilitic ulceration of rectum, 242.
 Section of stricture, complete longitudinal, 311.
 Sims's speculum, 392.
 Sinus, fistulous, laying open, 178.
 Sloughing of invaginated intestine, 65, 66 (note), 68 (note), 69 (note).
 Soft fibrous polypus, 103 *et seq.*
 Spasmodic contraction of the anus, 212.
 Speculum ani, different varieties of, 391, 392.
 Sponge tampon, 117.
 Sponge tent and laminaria for dilating strictures, 301.
 Stercoral abscesses, 135.
 Stricture, benign, of the rectum. *See* Benign stricture of the rectum.
 Stricture of rectum caused by nitric acid, 84.

- Studsgaard's case of bottle in rectum, 389 (note).
- Subcutaneous injection of ergot and ergotin for the cure of prolapsus ani, 78 (note).
- Syphilis and chancre, 235.
- Syphilis as a cause of rectal stricture, 268, 269.
- Syphilitic rectal ulcers, 241 *et seq.*
- Syphilitic stricture of the rectum, 238 (note).
- Syphiloma, ano-rectal, 121, 244.
- Tarnowsky on the evidence of the syphilitic diathesis, 247.
- Tertiary syphilitic lesions of rectum, 243.
- Thomas's case—removal of piece of walking-stick from rectum, 387.
- Threadworms, 8; diagnosis of, 9; treatment for, ib.
- Thrombosis as the cause of peri-rectal abscess, 282.
- Traumatic abscesses, 135 *et seq.*
- Trichiasis of the anus, 11 (note).
- Tubercular deposit in rectal ulcers, 229.
- Tubercular diarrhoea, 228.
- Tuberous abscesses, 129.
- Tubular rectal bougies, 302.
- Tubular stricture of the rectum, 259.
- Tuffnell's tubular rectal bougies, 302.
- Tumors, rectal, 53. *See* Polypus, etc.
- Ulcer of the rectum, 221-257; ulcers of the rectum, as a class, painful, 222; causes of rectal ulcer, 223; (1) local traumatic injury, ib.; abrasion from hard faeces or foreign bodies, ib.; bursting of a hæmorrhoidal vein, 224; injuries during parturition, 224, 225; (2) dysentery as a cause of ulcer, 226; diarrhoea produced by rectal ulcer, ib.; dysenteric stricture, 227; (3) scrofula and tubercle as causes of rectal ulcers, 228; tubercular diarrhoea, ib.; cases of tubercular deposit in rectal ulcers, 229, 230; lupus exedens, 231; syphilis and strumous diathesis as causes of incurable ulcers, 231, 232; ulceration from inanition, 232; perforating ulcer, 233; "scirrho-contracted" rectum, ib.; rodent ulcer, ib.; (4) chancre as a cause of rectal ulcer, 235; auto-inoculation of anal fissures from vaginal chancroids, 236, 237; chancroidal ulcer of anus or rectum rare in men, 237; frequency of rectal stricture in women, ib.; chancroidal ulceration in women, 238-240; (5) syphilis as a cause of rectal ulcer, 241; chancre in the rectum, 242; mucous patches at anus, 243; tertiary syphilitic lesions of the rectum, ib.; gummy tumors, 244; Virchow's case of tertiary syphilis of rectum, etc., 245; Allingham and others on rectal syphilis, 245, 246; evidence of syphilitic diathesis, 247; (6) cancer as a cause of ulcer of rectum, 248; liability of stricture to follow ulceration, ib.; symptoms of ulceration of the rectum, 249; loose passages with blood, ib.; pain, etc., 250; prognosis serious, ib.; diagnosis, 251; treatment, 252 *et seq.*; inefficiency of local applications, 253; dietetic regulation, ib.; rest in horizontal position, 254; incision of ulcer and division of sphincters, ib.; value of incision, 255; colotomy, 256, 257.
- Urine, faecal matter in, 282.
- Vaginal chancroids, inoculation of anal fissures from, 236.
- Valvular stricture of the rectum, 258.
- Varieties of complete prolapse, 62, 63.
- Varieties of speculum ani, 391 *et seq.*
- Venereal causes of rectal ulcer, 235.
- Verneuil's cases of section of stricture, 312, 313.
- Vidal, M.—cases of prolapsus ani cured by subcutaneous injection of solution of ergot in cherry-laurel water, 78 (note).
- Villous polypi, 109.
- Villous tumor of the rectum, 108.
- Virchow's case of tertiary syphilis affecting rectum, etc., 245.
- Wales's flexible caoutchouc rectum tubes, 288, 393.
- Walking-stick, piece of, in rectum, 387.
- Weiss's anal speculum, 207.
- Wilson, Dr.—case of removal of invaginated ileo-caecal valve, with portion of ileum, 68, 69 (note).
- Worthington, Dr.—case of intussusception, 67 (note).

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